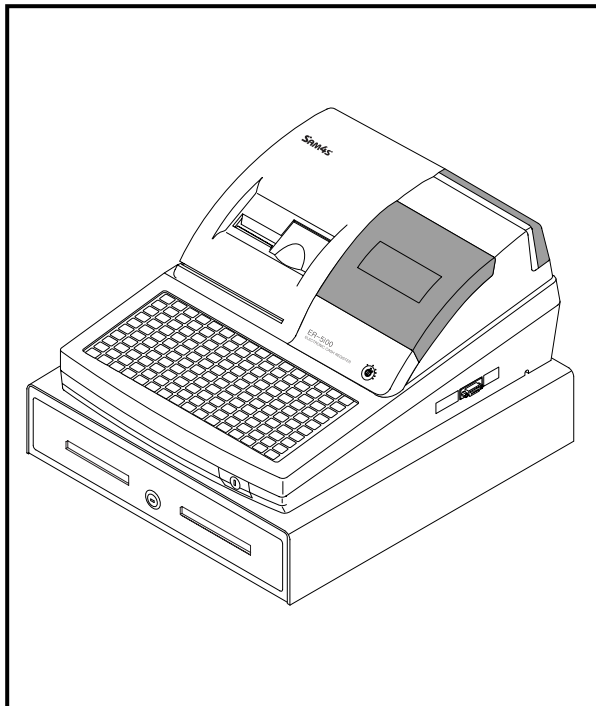


SAM4S

ELECTRONIC CASH REGISTER
ER-5100 / ER-5140
ER-5115 / ER-5140FP

SERVICE Manual

ELECTRONIC CASH REGISTER



C O N T E N T S

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5. Alignment and Adjustment
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
About this Manual


This service manual describes how to perform hardware service maintenance for the SAM4S ER-5100 Series Electronic Cash Register.

Notes

Notes may appear anywhere in the manual. They describe additional information about the item.

Precaution symbols

 Indicates a Safety Precaution that applies to this part component.

 Indicates the part or component is an electro-statically sensitive device. Use caution when handling these parts.

Acronym	Definition
ASIC	Application for Specific Integrated Circuit
ECR	Electronic Cash Register
EPROM	Electric Programmable ROM
ESD	Electro-statically Sensitive Device
Ext.	Extension
F	Fiscal
GND	Ground
IC	Integrated Circuit
N.C.	Not Connected
PCB	Printed Access Memory
R..	Receive
RAM	Random Access Memory
ROM	Read Only Memory
SRAM	Static Random Access Memory
T..	Transmission

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SAM4S ER-5100 SERIES

ER-5100 Service Manual

March 2004.

V1.0

Printed in KOREA

Overview of this System ECR

This service manual provides the technical information for many individual component systems, circuits and gives an analysis of the operations performed by the circuits. If you need more technical information, please contact our service branch or R&D center. Schematics and specifications provide the needed information for the accurate troubleshooting.



All information in this manual is subject to change without prior notice. Therefore, you must check the correspondence of your manual with your machine. No part of this manual may be copied or reproduced in any form or by any means, without the prior written consent of Shin Heung Precision

Note: Before using this System Electronic Cash Register (ECR) for the first time, leave it powered on in the REG mode for at least twenty-four hours. This allows the Ni-MH battery, which maintains the memory of the SECR while the power is off, to charge completely.

1 Precaution Statements

Follow these safety, servicing and ESD precautions to prevent damage and to protect against potential hazards such as electrical shock.

1-1 Safety Precautions

1. Be sure that all of the built-in protective devices are replaced. Restore any missing protective shields.
2. When reinstalling the chassis and its assemblies, be sure to restore all protective devices, including nonmetallic control knobs and compartment covers.
3. Make sure there are no cabinet openings through which people-particularly children-might insert fingers and contact dangerous voltages. Such openings include excessively wide cabinet ventilation slots and improperly fitted covers and drawers.
4. Design Alteration Warning:
Never alter or add to the mechanical or electrical design of the ECR. Unauthorized alterations might create a safety hazard. Also, any design changes or additions will void the manufacturer's warranty.
5. Components, parts and wiring that appear to have overheated or that are otherwise damaged should be replaced with parts that meet the original specifications. Always determine the cause of damage or over- heating, and correct any potential hazards.
6. Observe the original lead dress, especially near the following areas: sharp edges, and especially the AC and high voltage supplies. Always inspect for pinched, out-of-place, or frayed wiring. Do not change the spacing between components and the printed circuit board. Check the AC power cord for damage. Make sure that leads and components do not touch thermally hot parts.
7. Product Safety Notice:
Some electrical and mechanical parts have special safety-related characteristics which might be obvious from visual inspection. These safety features and the protection they give might be lost if the replacement component differs from the original - even if the replacement is rated for higher voltage, wattage, etc.
Components that are critical for safety are indicated in the circuit diagram by shading, () or ().
Use replacement components that have the same ratings, especially for flame resistance and dielectric strength specifications. A replacement part that does not have the same safety characteristics as the original might create shock, fire or other hazards.

1 Precaution Statements

1-2 Servicing Precautions

WARNING: First read the-Safety Precautions-section of this manual. If some unforeseen circumstance creates a conflict between the servicing and safety precautions, always follow the safety precautions.

WARNING: An electrolytic capacitor installed with the wrong polarity might explode.

1. Servicing precautions are printed on the cabinet. Follow them.
2. Always unplug the units AC power cord from the AC power source before attempting to:
 - (a) Remove or reinstall any component or assembly
 - (b) Disconnect an electrical plug or connector
 - (c) Connect a test component in parallel with an electrolytic capacitor
3. Some components are raised above the printed circuit board for safety. An insulation tube or tape is sometimes used. The internal wiring is sometimes clamped to prevent contact with thermally hot components. Reinstall all such elements to their original position.
4. After servicing, always check that the screws, components and wiring have been correctly reinstalled. Make sure that the portion around the serviced part has not been damaged.
5. Check the insulation between the blades of the AC plug and accessible conductive parts (examples: metal panels and input terminals).
6. Insulation Checking Procedure: Disconnect the power cord from the AC source and turn the power switch ON. Connect an insulation resistance meter (500V) to the blades of AC plug.

The insulation resistances between each blade of the AC plug and accessible conductive parts (see above) should be greater than 1 megohm.
7. Never defeat any of the B+ voltage interlocks. Do not apply AC power to the unit (or any of its assemblies) unless all solid-state heat sinks are correctly installed.
8. Always connect an instrument's ground lead to the instrument chassis ground before connecting the positive lead ; always remove the instrument's ground lead last.

1-3 Precautions for Electrostatically Sensitive Devices (ESDs)

1. Some semiconductor (solid state) devices are easily damaged by static electricity. Such components are called Electrostatically Sensitive Devices (ESDs); examples include integrated circuits and some field-effect transistors. The following techniques will reduce the occurrence of component damage caused by static electricity.
2. Immediately before handling any semiconductor components or assemblies, drain the electrostatic charge from your body by touching a known earth ground. Alternatively, wear a discharging wrist-strap device. (Be sure to remove it prior to applying power - this is an electric shock precaution.)
3. After removing an ESD-equipped assembly, place it on a conductive surface such as aluminum foil to prevent accumulation of electrostatic charge.
4. Do not use Freon-propelled chemicals. These can generate electrical charges that damage ESDs.
5. Use only a grounded-tip soldering iron when soldering or unsoldering ESDs.
6. Use only an anti-static solder removal device. Many solder removal devices are not rated as anti-static; these can accumulate sufficient electrical charge to damage ESDs.
7. Do not remove a replacement ESD from its protective package until you are ready to install it. Most replacement ESDs are packaged with leads that are electrically shorted together by conductive foam, aluminum foil or other conductive materials.
8. Immediately before removing the protective material from the leads of a replacement ESD, touch the protective material to the chassis or circuit assembly into which the device will be installed.
9. Minimize body motions when handling unpackaged replacement ESDs. Motions such as brushing clothes together or lifting a foot from a carpeted floor can generate enough static electricity to damage an ESD.

2 Product Specifications

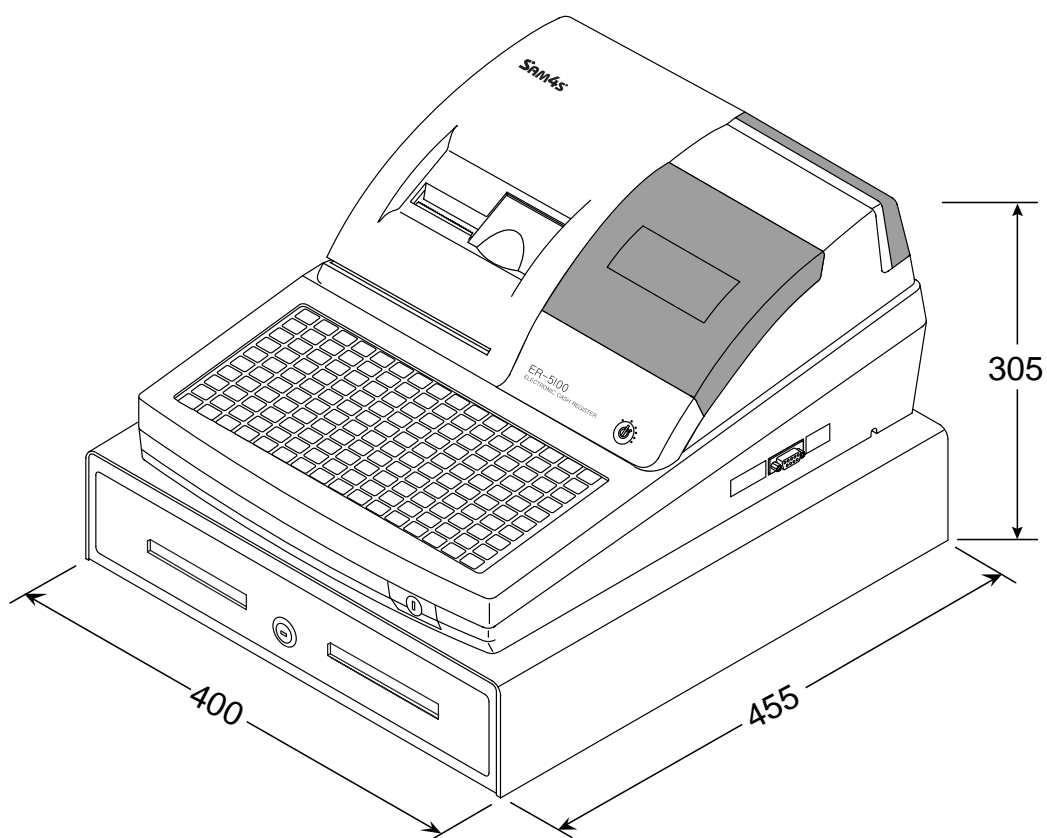
Specifications are correct at the time of printing. Product specifications are subject to change without notice. See below for product specifications.

2-1 Specifications

Item	Description	Remark
AC Power Source	AC 120V, 60Hz AC 230V, 50Hz	USA Europe
Power Consumption	35W max	USA and Europe
R/J Printer	1 pair, 9-pin Dot matrix Printing speed; 3.0 lines per second Receipt / Journal paper sensor	
Processor	SCR60K	
Memory	* Main PCB Default : SRAM(KM681000*1) : 128kbyte EPROM(27C010*1) : 128kbyte or EPROM(27C020*1) : 256kbyte Ext. : SRAM(KM681000*1) : 128kbyte * Fiscal(ER-5140FP) Default : EPROM(27C512*1) : 64kbyte Ext. : EPROM(27C010*1) : 128kbyte	When battery fully charged
Data Storage	60 Days	
Battery	Ni-MH, 3.6V, 70mAh Charging time : 24 hours	
Display	Front : 10-digit display (Front display) Rear : 10-digit display (Real display)	
Keyboard	160-Key 90-Key 60-Key	ER-5100 ER-5140/5140FP ER-5115
Interface	Default - RS-232C : 1 port (Optional Board I) or Modular Jack : 1 ports (Optional Board I) Ext. - RS-232C : 2 port (Optional Board II)	
Drawer	5C5B 8C4B 8C7B Weight : 9.3 Kg Dimensions : 400(W) x 450(L) x 111(H)	USA Europe EURO When packed millimeters
Packing Carton	Weight : 17.6 Kg Dimensions : 498(W) x 564(L) x 384(H)	millimeters

Equipment specifications are subject to change without notice.

2-2 Dimensions



2-3 Communication Interfaces

2-3-1 Serial Interfaces and Port Locations

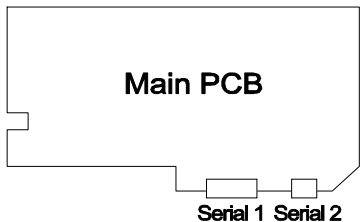
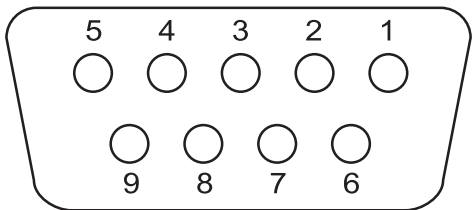
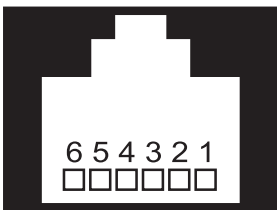


Figure 2-1. RS-232C Interface Locations

2-3-2 Pin Descriptions for Serial Interfaces (Optional P.C.B.)



Serial port 1 (D-sub female)



Serial port 2 (Modular Jack)

Figure 2-2. Pin Number Assignment

Table 2-1. Pin Descriptions and Signals of Serial Ports

Serial port #1

Pin #	Signal
1	N.C.
2	RxD
3	TxD
4	DTR
5	GND
6	N.C.
7	N.C.
8	DTR
9	N.C.

Serial port #2

Pin #	Signal	Pin #	Signal
1	DTR	1	DTR
2	N.C.	2	N.C.
3	TxD	3	TxD
4	N.C.	4	N.C.
5	RxD	5	Rxd
6	GND	6	gnd

Memo

3 Installation and Operation

This chapter describes the method for installing the ECR system and shows the locations of the various feature items.

3-1 System configuration

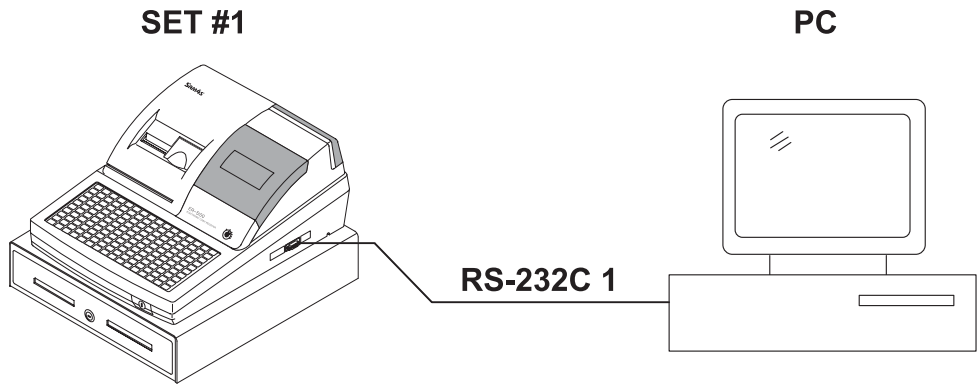


Figure 3-1. Terminal System

3-1-1 Terminator Specification

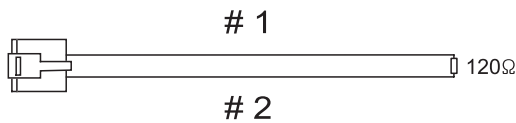


Figure 3-2. Terminator

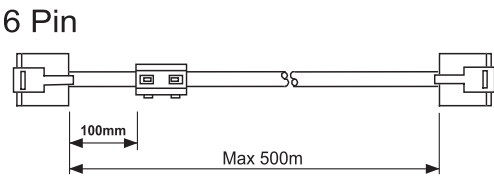


Figure 3-4. Cable for Serial Port 2

3-1-2 Cable Specifications

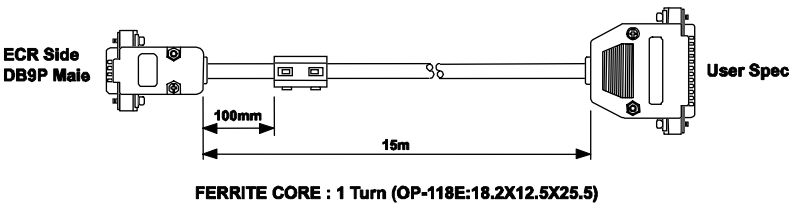


Figure 3-3. Cable for Serial Port 1

3 Installation and Operation

3-2 Installation

WARNING: When connecting the keyboard to the Main PCB, make sure the membrane sheet is shaped as in figure 3-6(a), below. If the membrane is shaped as in Figure 3-6(b), the keyboard may malfunction.

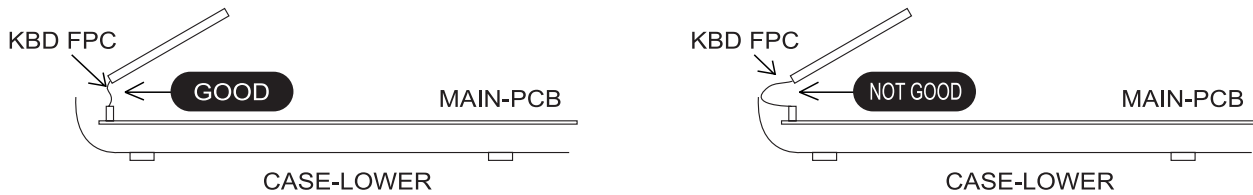


Figure 3-6. Membrane Shape

3-2-1 Ribbon Cassette Installation

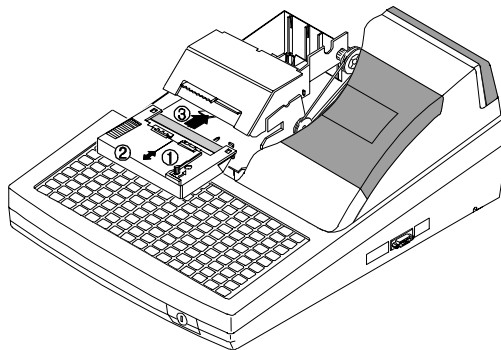


Figure 3-7. Ribbon Cassette

1. Before inserting ribbon cassette②, turn knob① (see Figure 4-4) counterclockwise to prevent twisting the ribbon.
2. After inserting the ribbon cassette② at the center③ of the printer, turn the knob ① counterclockwise again to make sure the ribbon moves freely in the cassette

3-2-2 Receipt / Journal Paper Insertion

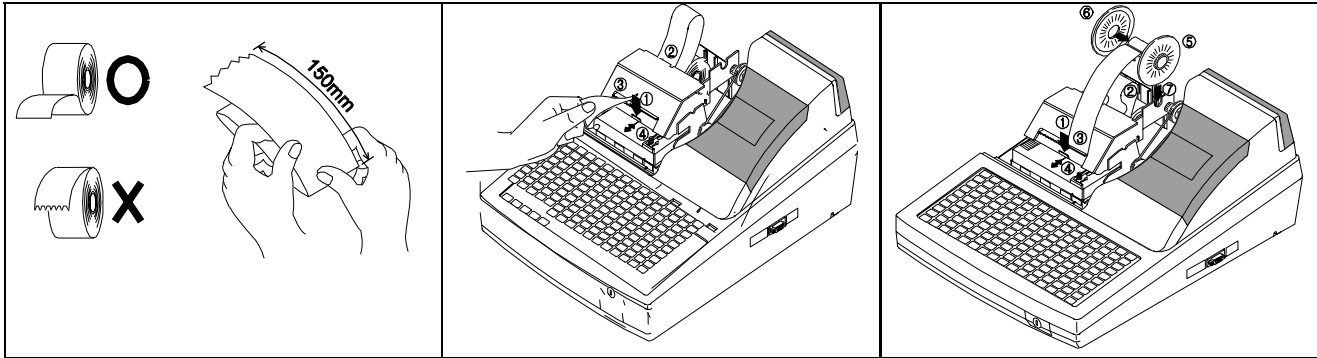


Figure3-8 Folding Paper for Insertion

Figure3-9 Inserting the paper

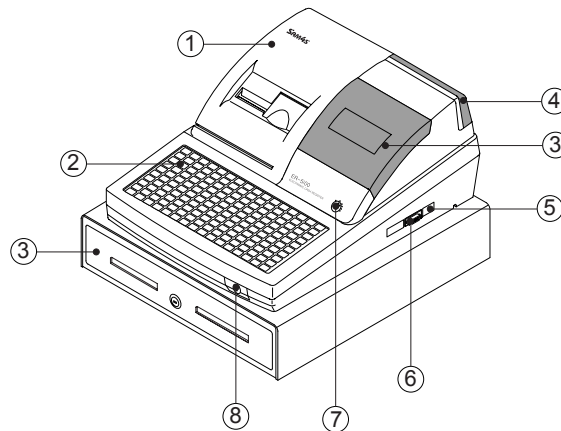
Figure3-10 Inserting the Journal Paper

1. Using a new roll of paper, unroll the paper about 150mm and fold the paper as shown in Fig 3-8
2. Insert fold paper into the chute ② of the printer. While holding the lever ① down, pull the paper out until the fold point ③ is completely out of the printer. And turn the knob ④ like an arrow. (Fig 3-9)
3. Cut the receipt paper.
4. Insert the journal into paper the silt ③ of the rewind spindle. Wind the spindle three or four times.
5. Push end disk ⑥ into the spindle as shown in Fig 3-10.
6. Insert the spool to the printer part ⑤.
7. When the journal paper is loose, rewind the spindle to tighten the paper.

3-3 Operation

Note: Before using this Electronic Cash Register (ECR) for the first time, leave it powered ON in the REG mode for at least twenty-four hours. This allows the Ni-Cad battery, which maintains the ECRs memory while the power is OFF, to fully charge.

3-3-1 ECR Features



- ① Cover Printer
- ② Impact dot Printer
- ③ Keyboard
- ④ Drawer
- ⑤ Drawer Lock Key

- ⑥ Serial Interface Port
Serial 1 (D-sub 9 Pin) *2
Serial 2 (Modular Jack) *1
- ⑦ Mode Key Switch
- ⑧ Rear Display
- ⑨ Clerk Key

3 Installation and Operation

3-3-2 Mode switch

This position of the Key in the Mode Switch determines the action of the SECR. Table 3-1 shows the various modes that are available.

Table 3-1. ECR Modes

Mode	Function
VOID	Cancel operation
OFF	Operation Stop
REG	Sales operation
X	X-level report generation
Z	Z-level report generation
P	Program mode
MC	Manager control

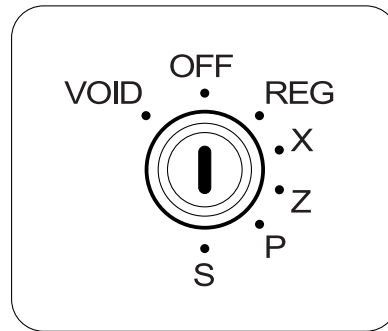


Figure 3-14. Mode Switch

3-3-3 Keyboard Matrix

The ER-5100, ER-5140, ER-5115 and ER-1551F ECRs offer three different types of keyboards; 160-key, 90-key or 60-key as shown in Table 3-2.

Table 3-2. Keyboard Types

Model	Keys	Type
ER-5100	160	Membrane (Flat)
ER-5140	90	Membrane
ER-5115	60	Membrane
Er-5115F/FP	60	Membrane

4 Disassembly and Assembly

This chapter describes the Disassembling and Reassembling procedures for ER-5100, electronic cash registers.

WARNING: This ECR contains electro-statically sensitive devices. Use caution when handling any components.

4-1 Disassembly

Caution: Disconnect the ECR from the external power source before Disassembly.

Note: The following directions are given for the ER-5100. differences between the models are identified in the text.

4-1-1 Upper Case Disassembly

1. Lift off the Printer cover.
2. Remove three screws ((B-6) and (B-11)) on the Upper Case and lift it up.
3. Remove the red and the white connectors on the main PCB.
4. Remove the Upper Case.

2. Remove the two screws, (b), and remove the Ribbon Frame, B, from the Lower Frame assembly I, as shown in the drawing.
3. Remove the four screws, (c), and separate the Upper Frame Assembly, C, from the Lower Frame assembly, I. Pull the Upper Frame assembly in the direction shown in figure 4-2.

4-1-2 ERP-400 Printer Disassembly

1. Remove the four screws (a) on the Upper Frame Assembly, C, and remove the Cover, A. See Figure 4-1, below.

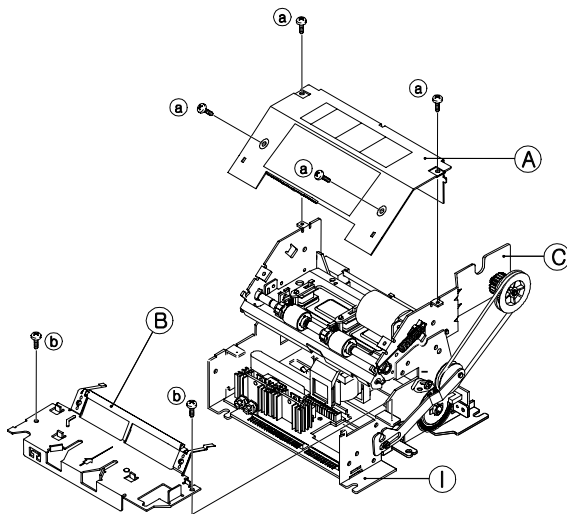


Figure 4-1. Printer Disassembly

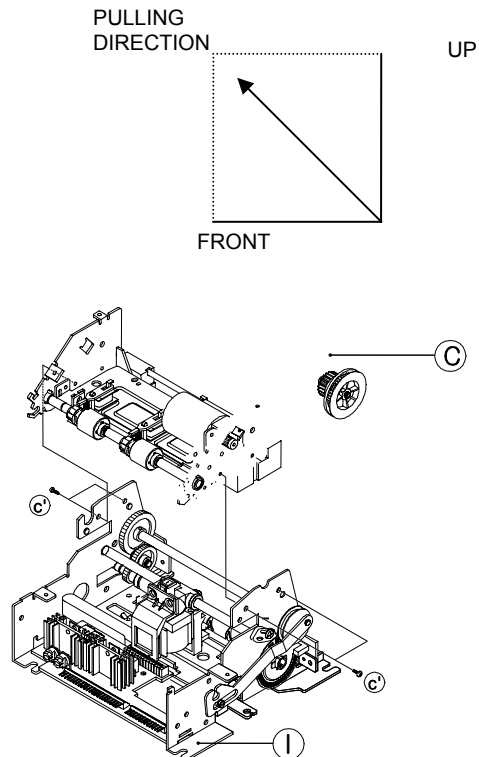


Figure 4-2. Separating Upper Frame from the Lower Frame.

4 Disassembly and Assembly

4. Turn the upper Frame Assembly, down and remove the three screws, . Remove the Stamp Paper Guide Assembly D, from the Upper Frame Assembly C.

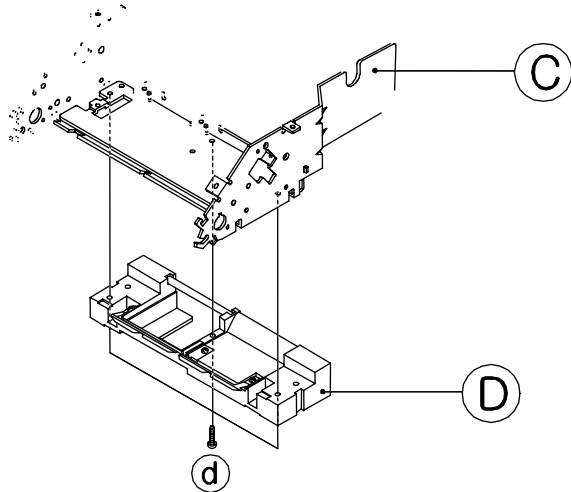


Figure 4-3. Stamp Paper Guide Removal

5. Remove the left-side screw, , on the Platen Paper Guide, E. This screw connects the Platen Paper Guide Assembly E, -to Stamp Paper Guide Assembly, D. See figure 4-4, below.

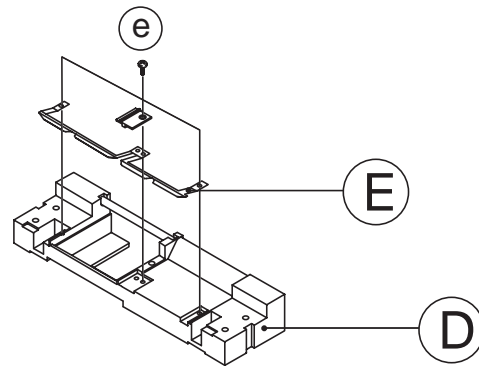


Figure 4-4. Platen Guide Removal

4-2 Assembly

Caution: Adjust the Head Gap (see Alignment and Adjusts chapter) before returning the ECR to the owner.

4-2-1 ERP-400 Printer Assembly

1. Position the Platen Paper Guide Assembly, E, on the Stamp Paper guide Assembly, D, and replace the screw - (e) (see Figure 4-4, above).
2. With the Upper Frame Assembly C, upside-down, position the Stamp Paper Guide Assembly, D, and replace the three screws - (d) (see Figure 4-3, above).
3. Position the Upper Frame Assembly, C, on the Lower Frame Assembly, I, and replace the four screws (c) (see Figure 4-5, to the right).

Caution: Locate Stamp Pusher (f) on the hatched area as shown in the figure.

4. Position the Ribbon Frame, B, on the Lower Frame Assembly, I, and replace the two screws (b) (see Figure 4-1, above)
5. Position the cover, A, on the Upper Frame Assembly, C, and replace the four screws - (a).

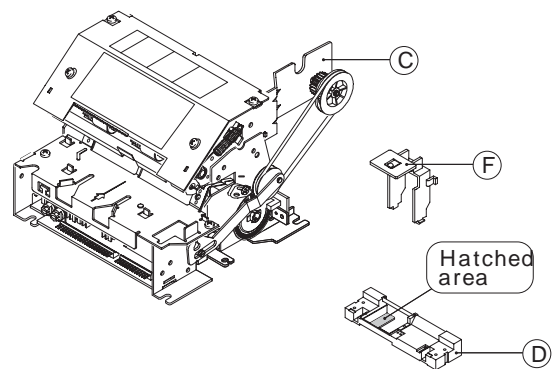


Figure 4-5. Stamp Pusher Position

4-2-2 Upper Case Assembly

1. Position the Upper Case so that the connectors are within reach of the Main PCB. Replace the red and the white connectors.
2. Position the Upper Case on the Lower Case and replace the three screws ((B-6) and (B-11))
3. Replace the Printer Cover.

Memo

5 Alignment and Adjustments

This chapter describes the methods for aligning and adjusting components in this ECR.

5-1 Printer Adjustments

5-1-1 Head Gap Adjustment

1. Assemble the Upper Frame Assembly, A, to the Lower Frame Assembly, I and loosely fox screws .
2. Wind the Head Gear counterclockwise to; move the Head to the right end of the Platen Guide.
3. Insert the Gap Gauge (width 0.5mm) and tighten the Head and Platen. Tighten the screws .
4. Wind the Head Gear counterclockwise again and move the Head to the left end of the Platen Guide.
5. Insert the Gap Gauge (0.5mm) and tighten the screws.
6. After tightening al screws , apply Nej-Lock (a brand of grease) on each of the four screws .

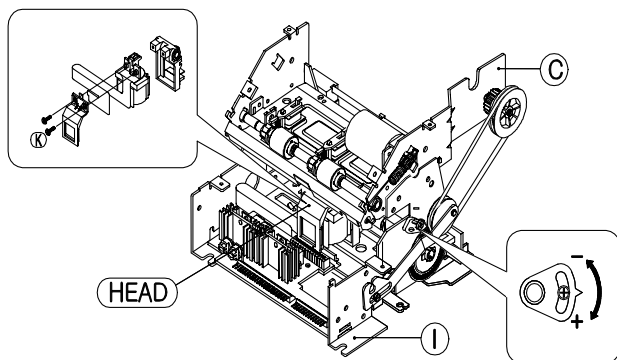


Figure 5-1. Head Gap Adjustment

5-1-2 Roll Paper Near-End Detector (Type 1 Paper Sensor)

5-1-2-(a) Adjustment Point

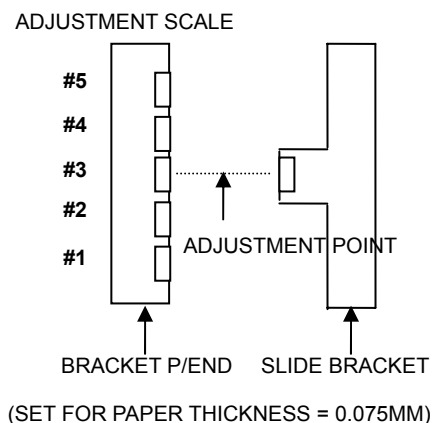


Figure 5-2. Adjustment Point

As Figure 5-2 shows, the slide bracket is set at Adjustment Scale #3. This is the appropriate scale for the recommended paper thickness (0.075mm).

The accuracy of the Near-End Detector depends on the Adjustment Scale setting and the Roll Paper Winding Core diameter. The only paper approved for use in this ECR has the following characteristics:

Table 5-1. Roll Paper characteristics

Characteristic	Measurement
Paper Thickness	0.075mm
Paper Width	44.5mm \pm 0.5mm

5 Alignment and Adjustments

The relationship between the Adjustment Scale and the paper remnant remaining on the core is as shown in figure 5-3.

Remnant of (m):

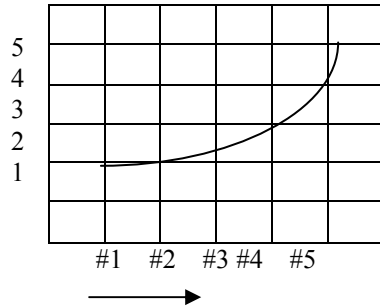
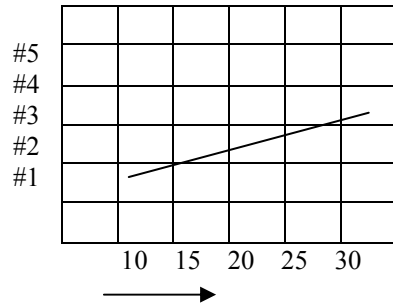


Figure 5-3. Relationship: Adjustment Scale to Remnant Length

Note: figure 5-3 applies only when using SAM4S recommended papers.

Figure 5-4 shows the relationship between the Adjustment Scale and the outer diameter of the Winding Core.

Adjusting Scale:



Outer diameter of paper winding core (Φ :mm)

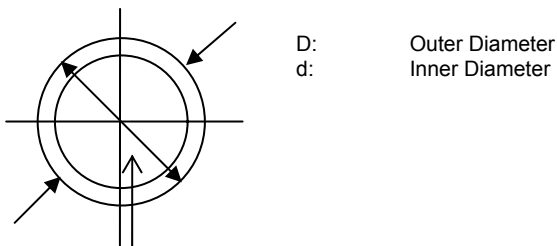


Figure 5-4. relationship: Adjustment Scale to Winding core diameter

Note:

1. When using roll paper other than SAM4S recommended paper, the roll paper remnant lengths will differ.
2. When using roll paper with a red end mark, the

Winding Core may pull out of its holder due to the paper sticking to Winding Core, If the Winding Core pulls out of its holder, the Paper Sensor may indicate an inaccurate remnant length.

5-1-3 Clearing a Paper Jam

5-1-3-(a) Paper Jamming Causes

1. When more than two papers have entered the paper path.
2. When paper cutting remnants remain in the paper exit space.

5-1-3-(b) Clearing Procedure

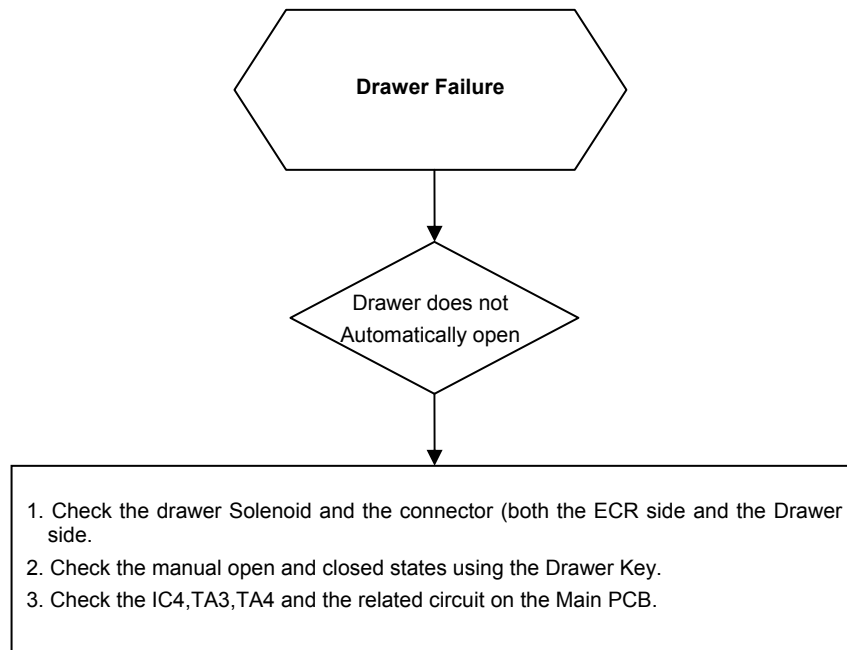
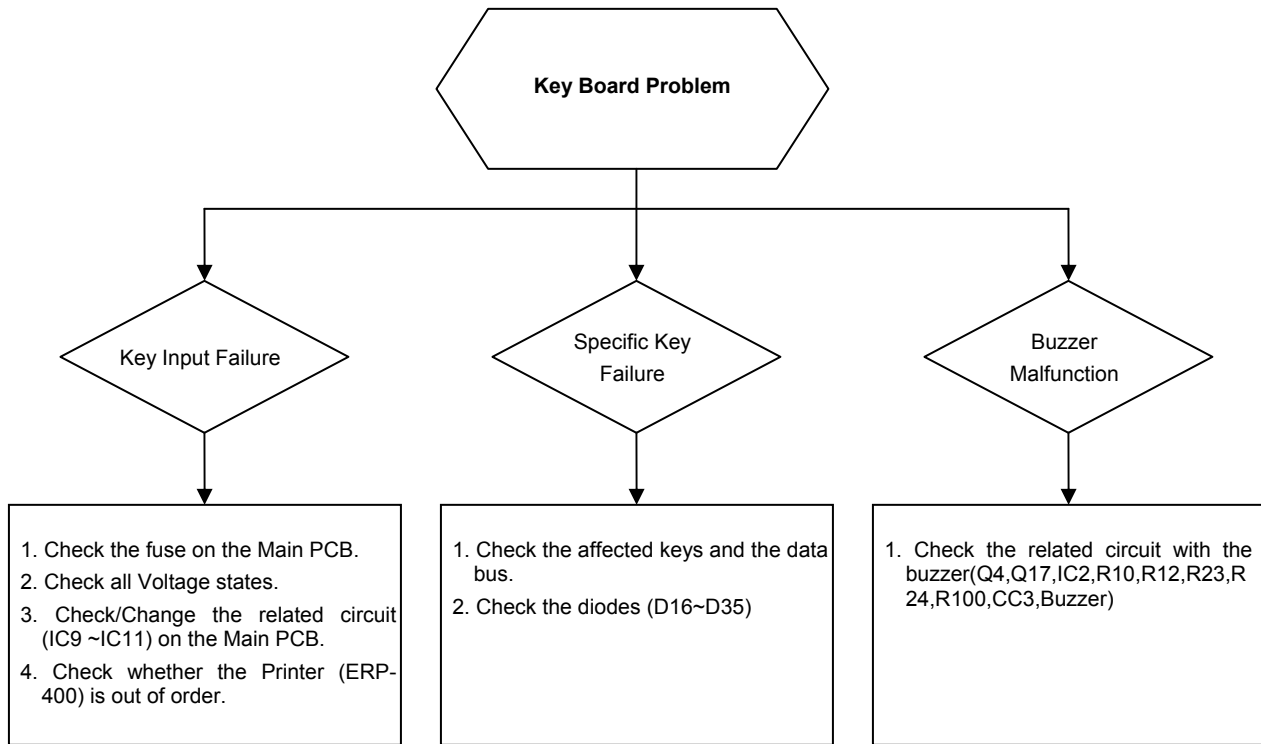
Caution: Always disconnect the power cord from the power outlet before working on the Paper Cutter.

1. Open the Printer cover and remove the Auto-Cutter Cover 2.
2. Remove all jammed paper at the Auto-Cutter.
3. Replace Auto-Cutter Cover 2 and close the Printer cover.
4. The Auto-Cutter will operate as soon as power is restored to the ECR. After cutting once, the Auto-Cutter goes to its normal state.

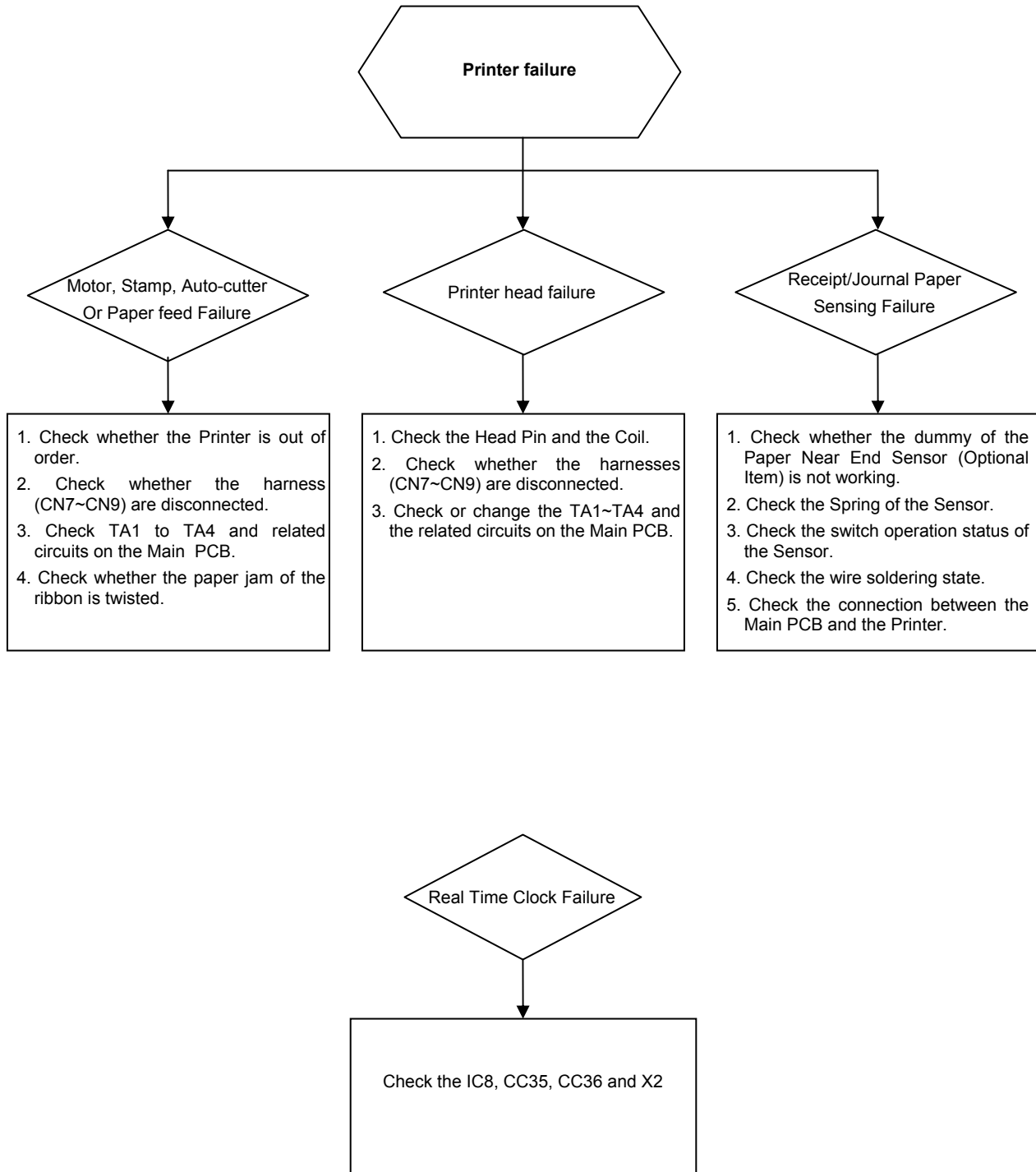
6 Reference Information

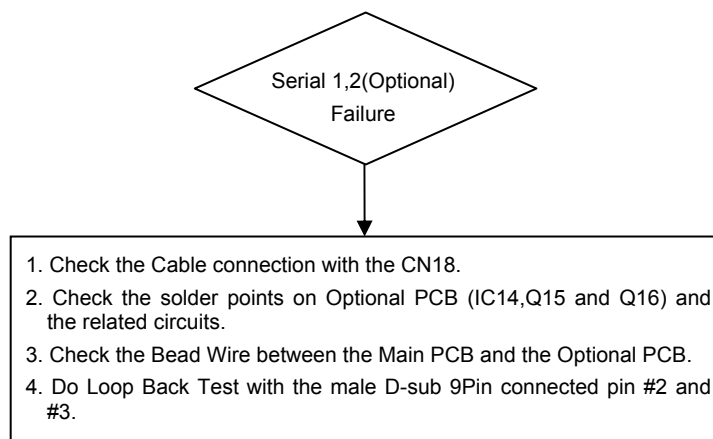
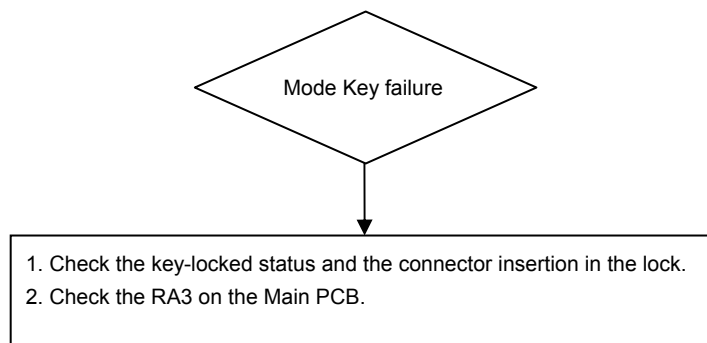
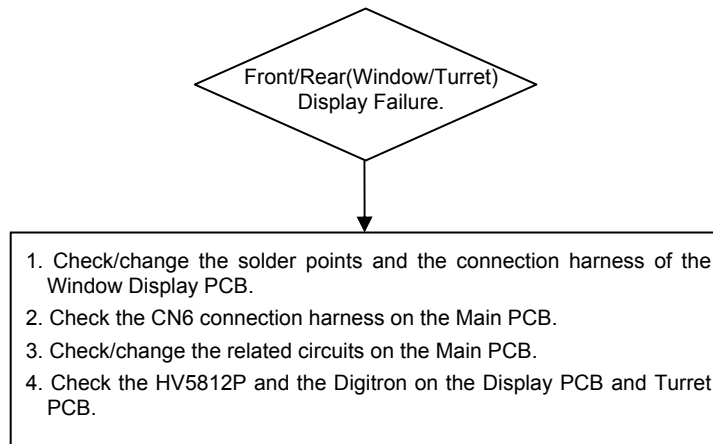
This chapter describes the methods for determining the source of malfunctions in this ECR.

6-1 Troubleshooting

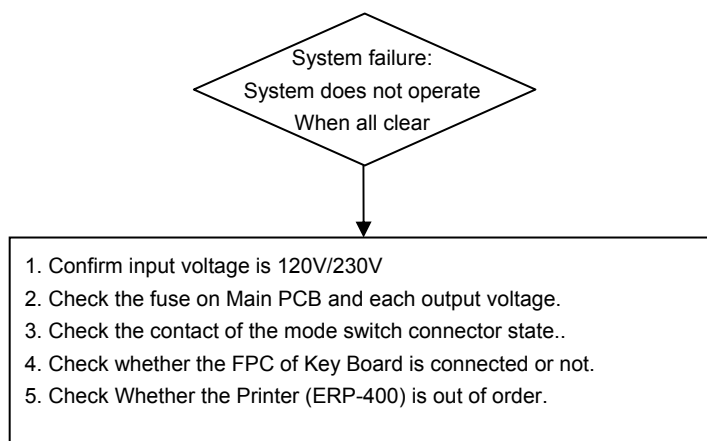
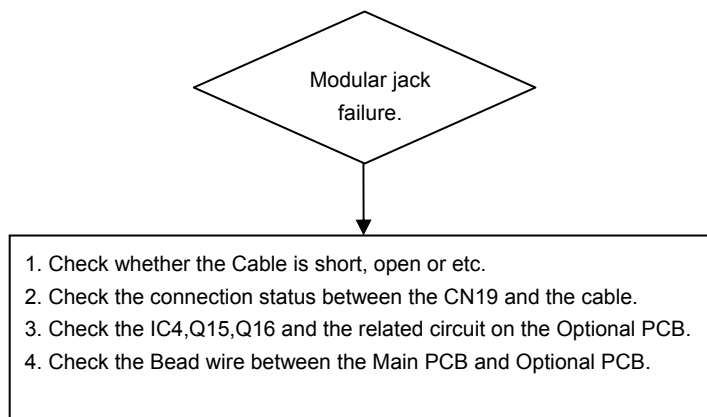


6 Troubleshooting and Test Procedure





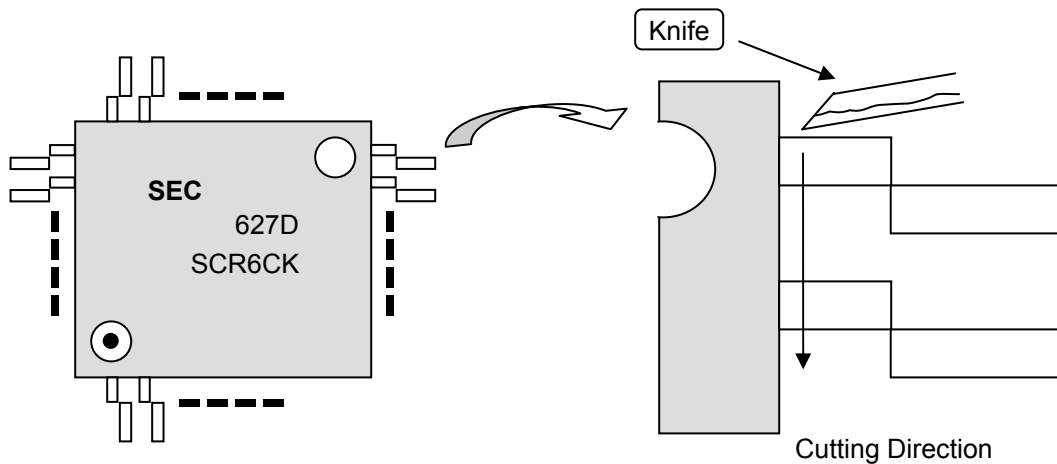
6 Troubleshooting and Test Procedure



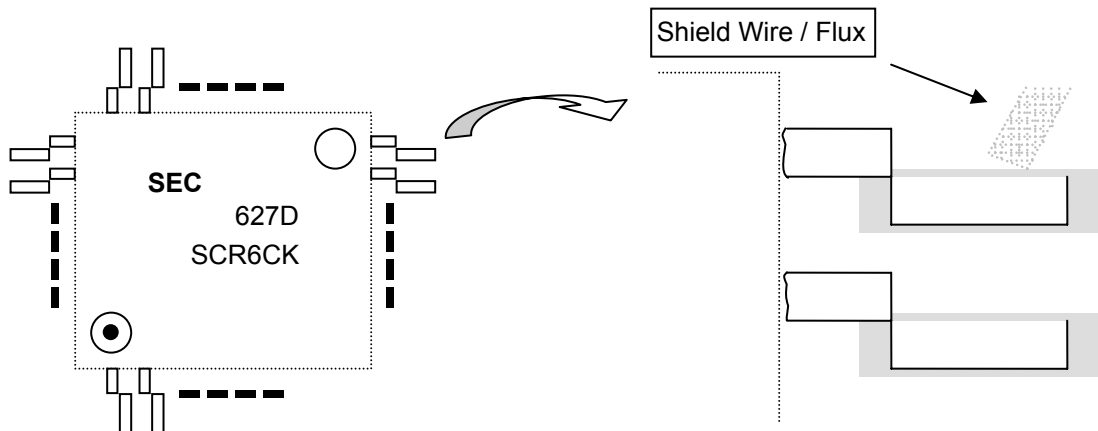
6-2 Change the ASIC SCR60K (IC4)

6-2-1 When change the IC4, follow next procedure if the IC4 or out of order certainly

1. Cut the ASIC-side end of the top of ASIC's pin with a sharp-tip knife, one by one by one carefully. There may be some Pattern under the IC4, so it is necessary that you cut carefully them.



2. After cutting, desolder the lead dummy at the pins using a shield wire or flux.

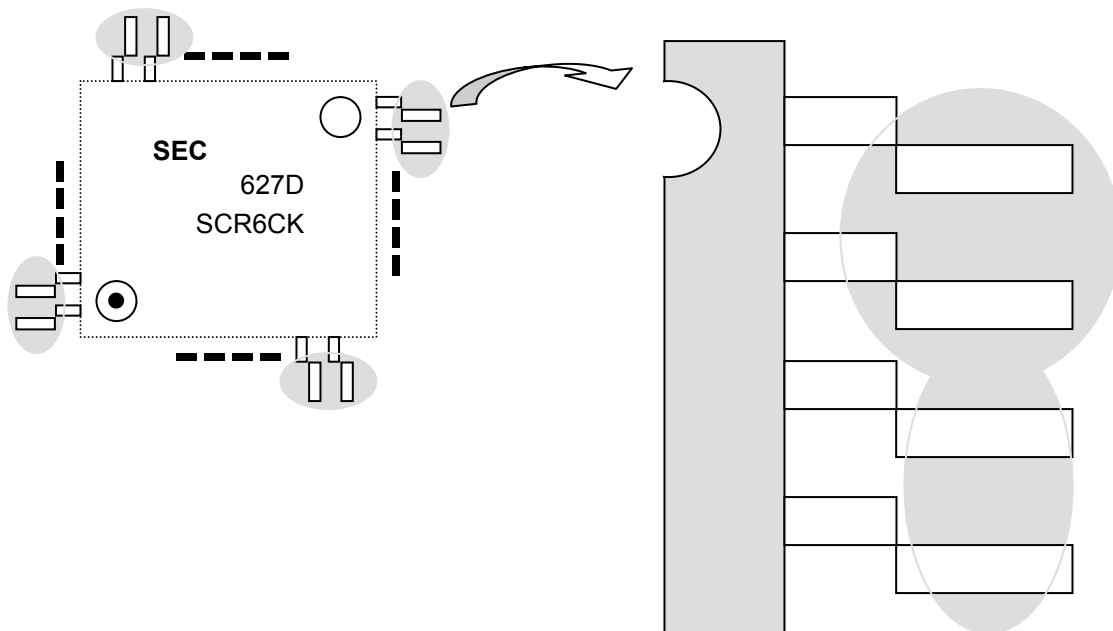


3. Then remove the pins one by one the soldering iron.
4. Desolder the lead dummy on the PCB one more time before soldering the new ASIC SCR60k.
5. Take the Position of SCR60K on the Land of the Main PCB.

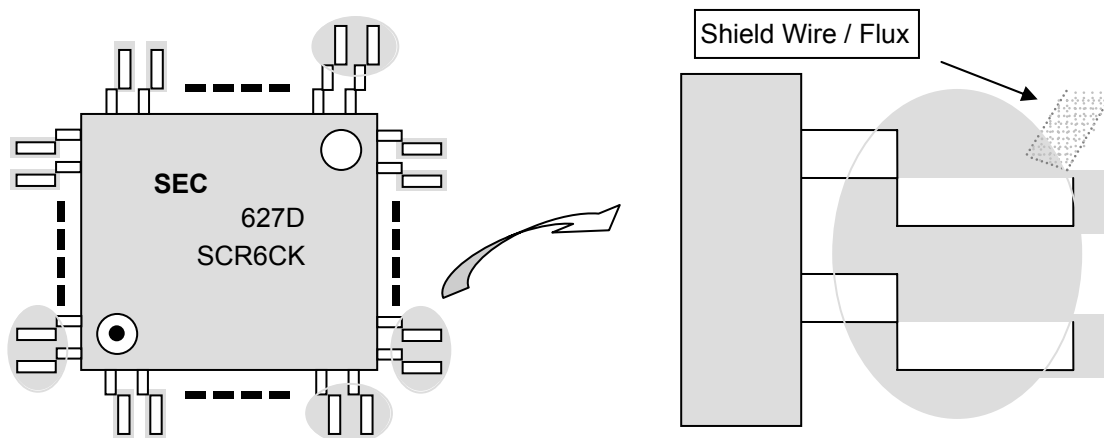
6. Solder the 4 points first like first like the left side of the following Figure.

6 Troubleshooting and Test Procedure

7. Solder the IC4 one top to bottom with much lead under the PCB erected.



8. Desolder the lead dummy around the end pin of the square using a shield wire of Flux liquid.
9. When using Flux liquid, after paint the Flux liquid and then desolder the lead dummy.



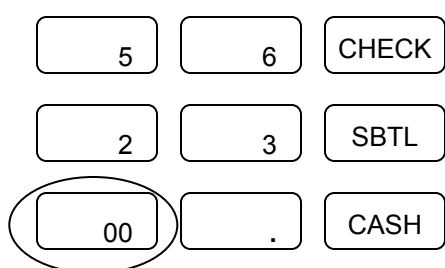
6-3 Test Procedure

6-3-1 Initial Clear Procedure

1. Turn key to P-Mode.
2. Unplug Register.
3. Hold down the SULTL on keyboard and plug in the Register, again.
4. The Register issues an Initial Clear receipt.

6-3-2 All Clear

1. Turn the Mode Key to S-Mode.
2. Turn off the power.
3. Hold down the Key 00 on the Key board, turn.
4. The Register issues an All Clear receipt.



USE THIS KEY FOR ALL CLEAR PROCEDURE
REGARDLESS OF WHAT KEY FUNCTION ID
PROGRAMMED AT THAT LOCATION

6-3-3 Loop Back Connections

1. Turn the Mode Key to S-Mode.



For the jig for the communication test

- | | |
|---|---|
| <input type="checkbox"/> Serial 1, serial 2 (Main PCB, D-sub 9) | <input type="checkbox"/> Serial 3, serial 4 (Option PCB, Modular) |
| TxD (3) ---- RxD (2) | TxD (3) ---- RxD (5) |

6-3-4 Test

1. Turn the Mode Key to S-Mode.
2. Enter the one key of the following code, and enter the Key CASH.

CODE	FUNCTION
1	Printer the Several Characters and Display 0~1 and the Several Characters.
2	Test the Key Board.
3	Test the Mode Key Switch.
4	Print the EPROM version and the Check Sum.
5	Test the Display (Display the H).
6	Print the H Pattern.

Memo

7 Exploded Views and Parts List

7-1 Main Set

7-1-1 Exploded View

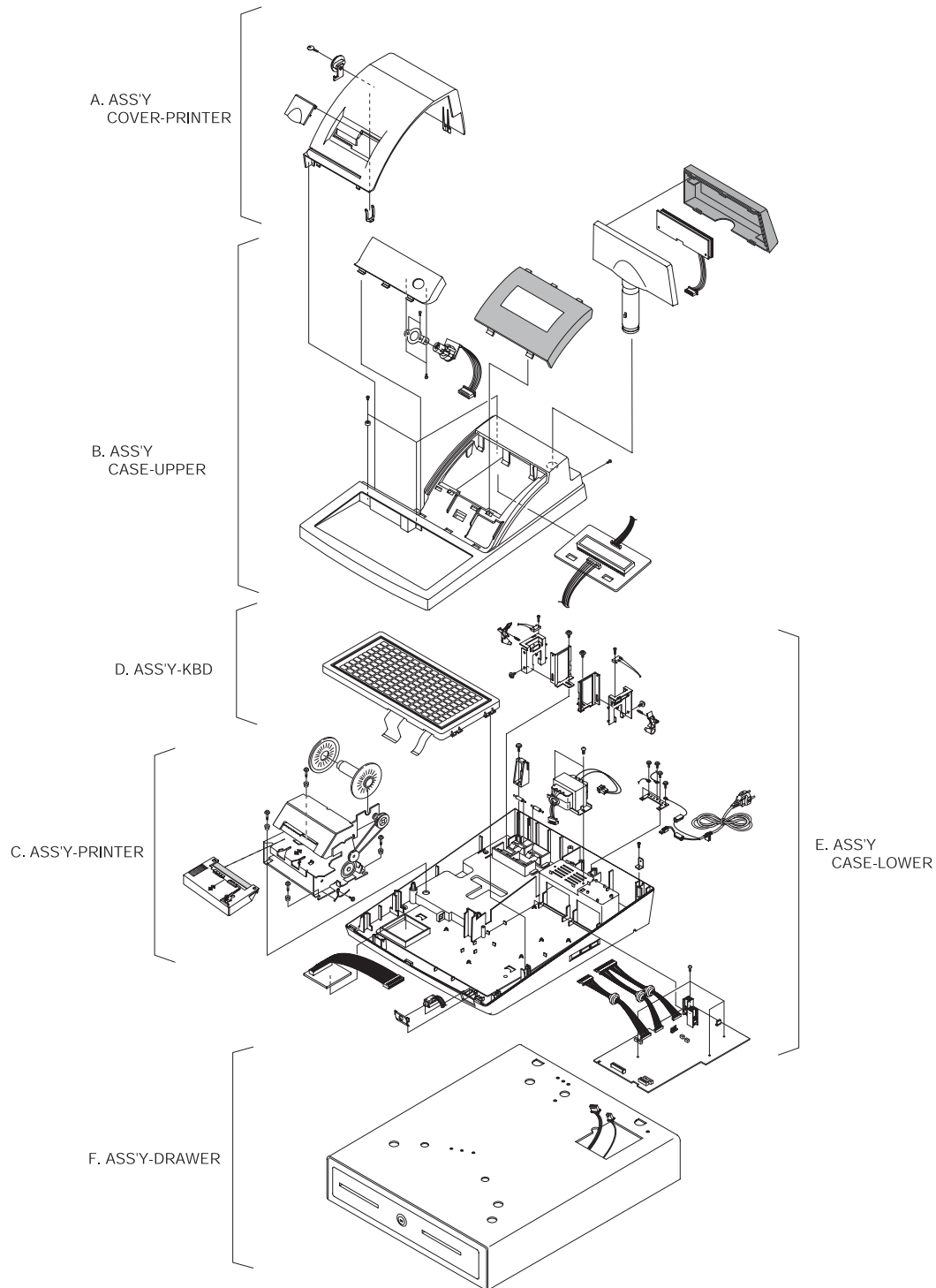


Figure7-1 Total Disassembly

7-1 Main Set

7-1-2 Parts List

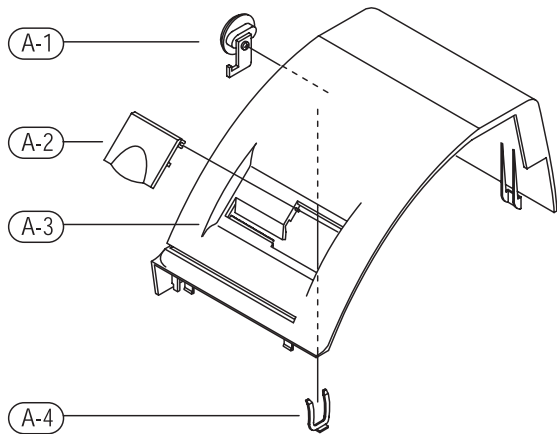


Figure7-2 Cover Printer Assembly

7-1-2-(a) Cover Printer Assembly

No.	Parts No.	Description / Specification	Q'ty	Design-Location	Serviceable	Remark
A	JK97-00141E	MEA-COVER PRINTER	1		N	
A-1	JK75-10391A	MEC-LOCK:ER-5100,-,-	1		Y	
A-2	JK72-40223A	PMO-WINDOW JOURNAL:PMMA	1		Y	
A-3	JK97-01069A	MEA-COVER PRINTER:ER-5100,BASIC,WORLD	1		Y	SAM4S
A-4	JK70-10323A	IPR-PLATE CLIP:ER-100,SWP,T0.5,-	1		Y	

7-1 Main Set

7-1-2 Parts List

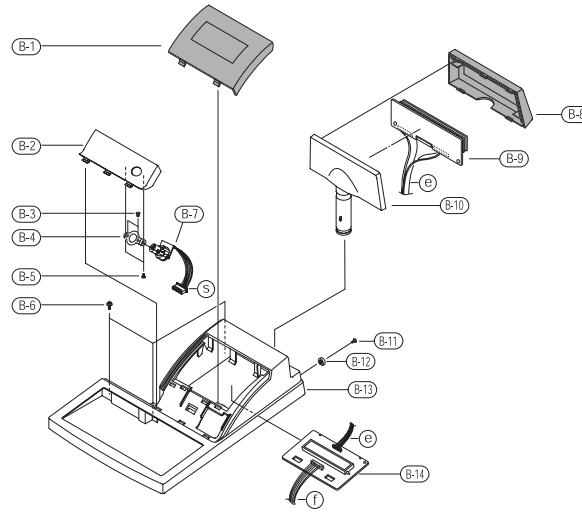


Figure7-3 Case Upper Assembly

7-1-2-(b) Case Upper Assembly

No.	Parts No.	Description / Specification	Q'ty	Design-Location	Serviceable	Remark
B-1	JK72-40356A	PMO-WINDOW DISPLAY:ER-5100,STANDARD	1		Y	
	JK72-40356B	PMO-WINDOW DISPLAY:ER-5115/40,STANDARD	1		Y	
	JK72-40356D	PMO-WINDOW DISPLAY:ER-5140F,SEPOL	1		Y	
	JK72-40356E	PMO-WINDOW DISPLAY:ER-5115/40,ROC	1		Y	
	JK72-40356F	PMO-WINDOW DISPLAY:ER-5100,ROC	1		Y	
	JK72-40920A	PMO-WINDOW DISPLAY:ER-51XX,CRS	1		Y	
B-2	JK72-40357A	PMO-COVER MODE S/W:ER-5100	1		Y	
	JK72-40357B	PMO-COVER MODE S/W:ER-5115	1		Y	
	JK72-40357C	PMO-COVER MODE S/W:ER-5140	1		Y	
	JK72-40357D	PMO-COVER MODE S/W:ER-5115F	1		Y	
	JK72-40357E	PMO-COVER MODE S/W:ER-5140F	1		Y	
	JK72-40357F	PMO-COVER MODE S/W:ER-5100F	1		Y	
	JK72-40357G	PMO-COVER MODE S/W:ER-5140FI	1		Y	
	JK72-40357H	PMO-COVER MODE S/W:ER-5115G/SAN	1		Y	
	JK72-40357J	PMO-COVER MODE S/W:ER-5100G/SAN	1		Y	
	JK72-40357K	PMO-COVER MODE S/W:ER-5100/SAN	1		Y	
B-3	6002-000319	SCREW-TAPPING:PH,+2,M3,L8,ZPC(YEL),SM20	2		Y	
B-4	JK70-10004A	IPR-BRKT MODE_S/W:SBHG-1,T1,-	1		Y	
B-5	6002-000319	SCREW-TAPPING:PH,+2,M3,L8,ZPC(YEL),SM20	2		Y	
B-6	6002-000172	SCREW-TAPPING:PH,+2S,M4,L15,PASS,STS304	3		Y	
B-7	JK96-00115A	ELA ETC-MODE S/W:SER-6500	1		Y	
B-8	JK72-40359A	PMO-WINDOW TURRET:ER-5100,PC,D/BLU,HB,-	1		Y	
B-9	JK92-01231A	PBA TURRET:ER-350F/5100/5200,10G	1		Y	
B-10	JK72-40358A	PMO-TURRET BODY:ER-5100,ABS,IVR,V0,-	1		Y	
B-11	6001-000367	SCREW-MACHINE:FH,+,M4,L10,NI PLT,SM20C,-	1		Y	
B-12	JK70-40305A	ICT-SHAFT MOLDING:SUM 24L,FISCAL	1		Y	Fiscal only
B-13	JK72-40352A	PMO-CASE UPPER;ER5100	1		Y	
	JK72-40352B	PMO-CASE UPPER;ER5115F,FISCAL	1		Y	
B-14	JK92-01230A	PBA SUB-DISPLAY:ER-5100/5200,STD	1		Y	

7-1 Main Set

7-1-2 Parts List

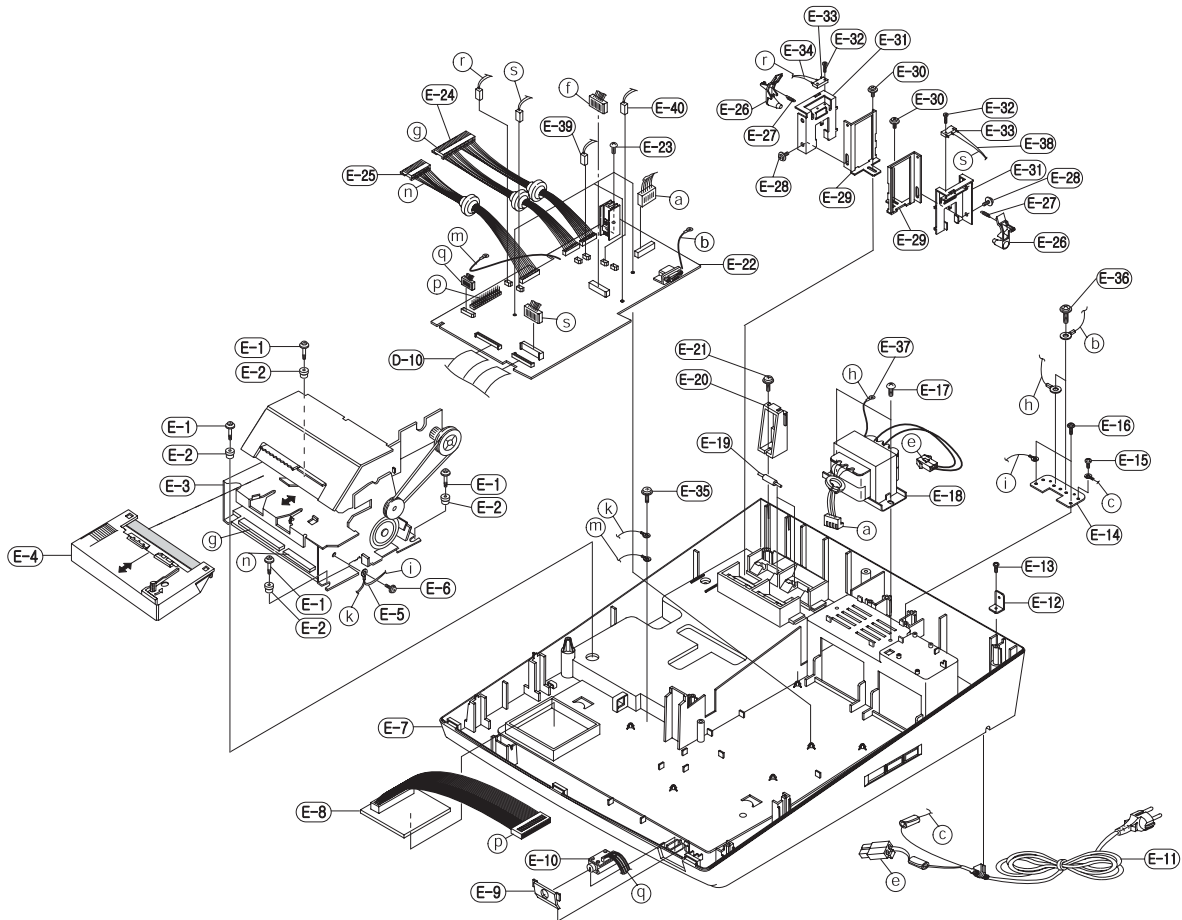


Figure7-4 Case Lower Assembly

7-1-2-(e) Case Lower Assembly

No.	Parts No.	Description / Specification	Q'ty	Design-Location	Serviceable	Remark
E-1	6002-000209	SCREW-TAPPING:RWH,+,2,M3,L17.5,ZPC(YEL),	4		Y	
E-2	JK73-40201A	RMO-PRINTER:NR,BLK	4		Y	
E-3	JK59-10511A	UNIT-PRINTER ASS'Y:ERP-400,ENGLISH	1		Y	
E-4	JK75-10383A	MEC-RIBBON CASSETTE:ERC-18	1		Y	
E-5	JK39-40021A	CBF HARNESS:VLI05,330/130	1		Y	
E-6	6001-000618	SCREW-MACHINE:PH,+,M4,L8,ZPC(YEL),SM20C,	1		Y	
E-7	JK72-40353A	PMO-CASE LOWER:ER-5100,ABS,IVR,V0,-	1		Y	
E-8	JK92-00130F	PBA MAIN-FISCAL BOAR;ER-5115F	1		Y	
E-9	JK72-40360A	PMO-COVER FRONT:ER-5100,ABS,IVR,V0,-	1		Y	
	JK72-40361A	PMO-COVER CLERK KEY:ER-5100	1		Y	OPTION
E-10	JK96-00114A	ELA HOU-CLERK ASSY;ER-5100	1		Y	OPTION
E-11	JK39-10002A	CBF-POWER CORD: AUSTRALIA	1		Y	
	JK39-10003A	CBF-POWER CORD: USA	1		Y	
	JK39-10008A	CBF-POWER CORD: UK	1		Y	
	JK39-10501A	CBF-POWER CORD: EUROPE	1		Y	
E-12	JK70-10002A	IPR-BRKT CASING:SBHG-1,T1.6,-	1		Y	
E-13	6002-000171	SCREW-TAPPING:PH,+,2S,M4,L10	1		Y	
E-14	JK70-10417A	IPR-GROUND PLATE:SECC,T1,-	1		Y	

7-1 Main Set

7-1-2 Parts List (Continue)

7-1-2-(e) Case Lower Assembly (Continue)

No.	Parts No.	Description / Specification	Q'ty	Design-Location	Serviceable	Remark
E-15	6006-000187	SCREW-ASS'Y MACH:WT,BH,+,M4,L6	1		Y	
E-16	6002-000174	SCREW-TAPPING:PWH,+,2,M3,L10	2		Y	
E-17	6006-000195	SCREW-ASS'Y TAPP:WS,BH,+,M4,L10,ZPC(YEL)	2		Y	
E-18	JK26-00015A	TRANS-POWER:USA: 120V 60Hz	1		Y	
	JK26-00014A	TRANS-POWER:EUROPE: 230V 50Hz	1		Y	
E-19	JK72-40330A	PMO-ROLLER PAPER/END:POM	2		Y	
E-20	JK72-40389A	PMO-HOLDER COVER/PRT:ER-5100,ABS,IVR	1		Y	
E-21	6002-000174	SCREW-TAPPING:PWH,+,2,M3,L10	1		Y	
E-22	JK92-01054A	PBA MAIN-CLK/OPTION;ER-5100,WO	1		Y	
E-23	6002-000174	SCREW-TAPPING:PWH,+,2,M3,L10	4		Y	
E-24	JK39-40306D	CBF HARNESS;ER-4615FP,-,UL1007	1	CN7,CN8	Y	
E-25	JK39-40306C	CBF HARNESS;ER-4615FP,-,UL1007	1	CN9	Y	
E-26	JK64-10301A	PMO-KNOB PAPER/END:POM,-,BLK,T2	2		Y	
E-27	6107-000127	SPRING-ES:PI0.3,D3.7,L10.8	2		Y	
E-28	6003-000221	SCREW-TAPTITE:PWH,+,S,M4,L8,ZPC(YEL)	2		Y	
E-29	JK70-10384A	IPR-BRKT PAPER/END:SECC,T1.5	2		Y	
E-30	6002-000175	SCREW-TAPPING:PWH,+,2,M3,L8,ZPC(YEL)	2		Y	
E-31	JK70-10385A	IPR-BRKT SLIDE:SECC,T1.5	2		Y	
E-32	6001-000496	SCREW-MACHINE:PH,+,M2,L12,ZPC(YEL)	2		Y	
E-33	3405-000103	SWITCH-MICRO:125V,100Ma,25gf,SPST	2		Y	
E-34	JK39-40303M	CBF-HARNESS:2P,630MM,WHT,1061,#26	1		Y	
E-35	6003-001149	SCREW-TAPTITE:PWH,+,S,M4,L10,ZPC(YEL)	1		Y	
E-36	JK60-00001A	SCREW-ASSY TAPTITE:-,SWRCH18A,M3,L8	2		Y	
E-37	JK39-40011A	CBF HARNESS:ER-350,-,UL1015,250MM	1		Y	
E-38	JK39-40303G	CBF-HARNESS:2P,355MM,RED,1007,#26	1		Y	
E-39	JK39-40200A	CBF HARNESS;ER-250,FLAT,UL1007	1	DRAWER	Y	
E-40	JK39-40302C	CBF HARNESS;ER-350,-,UL1007,18	1	COMPULSORY	Y	

This diagram is an exploded view of a mechanical assembly, likely a piece of industrial machinery. It shows the main components and their sub-assemblies, each labeled with a circled number. The parts are arranged in a hierarchical manner, showing how they fit together. Key sub-assemblies include:

- Top Section (40):** A large frame or housing assembly consisting of parts 40-1 and 40-2.
- Motor/Actuator (39):** A cylindrical component with internal parts 39-1 through 39-6.
- Drive Mechanism (27, 28, 29):** A complex assembly involving gears, shafts, and bearings, including parts 27, 28, 29-1, 29-2, 29-3, and 29-4.
- Control/Interface (24):** A small assembly with parts 24-1, 24-2, 24-3, 24-4, and 24-5.
- Base/Support (18):** A mounting bracket or base plate with parts 18-1 through 18-7.
- Internal Components (16, 17):** Detailed views of internal mechanisms, possibly valves or actuators, with parts 16-1 through 16-8 and 17-1 through 17-8.

The diagram uses dashed lines to indicate the assembly path and alignment of the components. The numbering system is consistent throughout, allowing for easy identification of each part.

SAM4S ER-5100 SERIES

7-2 Printer (ERP-400)

7-2-2 Parts List

No.	Parts-No.	Description/Specification	Q'ty	Design-Location	Serviceable	Remark
-	JK59-10511A	UNIT PRINTER, ERP-400	1		Y	
1	JK81-10511Z	MAIN FRAME CAULKING ASS'Y	1		Y	
2	JK81-10131A	SHAFT LEVER SUPPORT	1		Y	
3	JK81-10506G	GEAR REDUCTION_2	1		Y	
4	JK81-10506Q	GEAR HEAD IDLE_2	1		Y	
5	JK81-10506P	GEAR HEAD IDLE_1	1		Y	
6	JK81-10512A	GEAR REDUCTION_3 ASS'Y	1		Y	
6-1	JK81-10054A	GEAR REDUCTION_3	1		Y	
6-2	JK81-10055A	SHAFT REDUCTION_3	1		Y	
6-3	JK81-10513G	SPRING PIN (2x10)	1		Y	
6-4	JK81-10511M	E-RING (RE5.0)	1		Y	
7	JK81-10512B	ROLLING CAM ASS'Y	1		Y	
8	JK81-10057A	R-DETECTOR PLATE L	1		Y	
9	JK81-10058A	R-DETECTOR PLATE R	1		Y	
10	JK81-10510J	RIBBON DRIVING LEVER	1		Y	
11	JK81-10512E	LEAD CAM ASS'Y	1		Y	
11-1	JK81-10059A	GEAR REDUCTION_1	1		Y	
11-2	JK81-10060A	LEAD CAM	1		Y	
11-3	JK81-10286A	GEAR_HEAD_FEEDING	1		Y	
11-4	JK81-10513G	SPRING PIN (2X10)	2		Y	
12	6044-000231	E-RING (RE5.0)	1		Y	
13	JK81-10099A	SHAFT_TRACER	1		Y	
14	JK81-10063A	ENCODER SENSOR ASS'Y	1		Y	
15	JK81-10508A	ENCODER	1		Y	
16	JK81-10064A	HEAD MOTOR ASS'Y	1		Y	
16-1	JK81-10065A	MOTOR HEAD BRACKET	1		Y	
16-2	JK81-10066A	GEAR HEAD MOTOR	1		Y	
16-3	JK81-10067A	CORE	1		Y	
16-4	JK81-10068A	WIRE (L140, BLU)	1		Y	
16-5	JK81-10069A	WIRE (L140, RED)	1		Y	
16-6	JK81-10070A	MOTOR (RS-380PH)	1		Y	
16-7	JK81-00118A	CONDENSOR (104)	1		Y	
16-8	JK81-10513H	SCREW (PS 2.6x4)	2		Y	
17	JK81-10072A	MAIN PCB ASS'Y	1		Y	
17-1	JK81-10073A	MAIN PCB	1		Y	
17-2	JK81-10074A	HEAT SINK	2		Y	
17-3	JK81-10075A	SCREW-M (PH3x4)	2		Y	
17-4	JK81-10076A	TR (TIP41C)	1		Y	
17-5	JK81-10077A	TR (TIP42C)	1		Y	
17-6	JC39-40511A	JUMP WIRE	7		Y	
17-7	JK81-10079A	RESISTOR (12K)	1		Y	
17-8	JK81-10080A	RESISTOR (18K)	1		Y	
17-9	JK81-10081A	RESISTOR (2K)	1		Y	
17-10	JK81-10082A	RESISTOR (220)	1		Y	
17-11	JK81-10083A	RESISTOR (6.2K)	2		Y	
17-12	JK81-10084A	RESISTOR-CEMENT (7)	1		Y	
17-13	JK81-10085A	RESISTOR-CEMENT (10)	1		Y	
17-14	JK81-10086A	RESISTOR-SEMI (2K)	2		Y	

7-2 Printer (ERP-400)

7-2-2 Parts List

No.	Parts-No.	Description/Specification	Q'ty	Design-Location	Serviceable	Remark
17-15	JK81-10087A	CAPACITOR-E (50V, 47UF)	2		Y	
17-16	JK81-10088A	IC (L200)	2		Y	
17-17	JK81-10089A	CONNECTOR (12PIN)	1		Y	
17-18	JK81-10090A	CONNECTOR (13PIN)	1		Y	
17-19	JK81-10091A	CONNECTOR (22PIN)	1		Y	
18	JK81-10092A	RIBBON FRAME ASS'Y	1		Y	
18-1	JK81-10093A	RIBBON GUIDE PLATE L	1		Y	
18-2	JK81-10094A	RIBBON GUIDE PLATE R	1		Y	
18-3	JK81-10095A	RIBBON FRAME CAULKING ASS'Y	1		Y	
18-4	JK81-10096A	RIBBON FEED LEVER ASS'Y	1		Y	
18-5	JK81-10097A	SPRING RIBBON FEEDING	1		Y	
18-6	JK81-10511D	SCREW (T/T PH 3X4)	2		Y	
18-7	JK81-10511L	E-RING (RE4.0)	1		Y	
19	JK81-10098A	SHAFT HEAD GUIDE	1		Y	
20	JK81-10512M	HEAD CARRIAGE ASS'Y	1		Y	
21	JK81-10100A	SPRING CARRIAGE LOAD	1		Y	
22	JK81-10507A	HEAD COVER	1		Y	
23	JK81-10512Q	BACK COVER	1		Y	
24	JK81-10512R	SOLENOID STAMP ASS'Y	1		Y	
24-1	-	SOLENOID STAMP	1		N	
24-2	-	STAMP COIL SPRING	1		N	
24-3	-	STAMP PLUNGER	1		N	
24-4	-	STAMP SPRING	1		N	
24-5	-	E-RING (RE3.0)	1		N	
25	JK81-10512S	STAMP PUSER	1		Y	
26		STAMP ASS'Y	1		N	
26-1	JK81-10510M	STAMP COVER	1		Y	
26-2	JK81-10510N	PLATE STAMP SPRING	1		Y	
26-3	JK81-10101A	STAMP CASE	1		Y	
26-4	JK73-10204A	RPR-STAMP RUBBER	1		Y	
27	JK81-10512T	UPPER FRAME ASS'Y	1		Y	
28	JK81-10102A	VALIDATION SENSOR ASS'Y	1		Y	
29	JK81-10512V	PAPER ROLLING ASS'Y	1		Y	
29-1	JK81-10103A	GEAR PAPER ROLLING	1		Y	
29-2	JK81-10104A	PULLEY PAPER ROLLING	1		Y	
29-3	JK81-10105A	SPRING PAPER ROLLING	1		Y	
29-4	JK81-10106A	E-RING (RE6.0)	1		Y	
30	JK81-10512W	STAMP PAPER GUIDE ASS'Y	1		Y	
30-1	JK81-10107A	STAMP PAPER GUIDE	1		Y	
30-2	JK81-10108A	PLATEN PAPER GUIDE	1		Y	
30-3	JK81-10109A	SCREW (T/T CH 2x4)	3		Y	
31	JK81-10110A	SHAFT PAPER ROLLER	1		Y	
32	JK81-10509Y	TIMMING BELT	1		Y	
33	JK81-10512Y	PAPER GUIDE ASS'Y	1		Y	
33-1	JK81-10111A	PAPER GUIDE	1		Y	
33-2	JK81-10112A	GUIDE	2		Y	

7-2 Printer (ERP-400)

7-2-2 Parts List

No.	Parts-No.	Description/Specification	Q'ty	Design-Location	Serviceable	Remark
34	JK81-10512Z	RELEASE LEVER ASS'Y	1		Y	
34-1	JK81-10113A	RELEASE LEVER	1		Y	
34-2	JK81-10114A	PAPER HOLD ROLLER PLATE	1		Y	
34-3	JK81-10115A	PAPER HOLD ROLLER	2		Y	
34-4	JK81-10116A	SHAFT HOLD ROLLER	1		Y	
34-5	JK81-10117A	E-RING (RE2.5)	1		Y	
35	JK81-10521A	SPRING RELEASE	2		Y	
36	JK81-10118A	PAPER FEED ROLLER ASS'Y	1		Y	
36-1	JK81-10119A	GEAR PAPER FEED	1		N	
36-2	JK81-10120A	SHAFT PAPER FEED	1		N	
36-3	JK81-10121A	PAPER FEED ROLLER ASS'Y	2		N	
36-4	JK81-10122A	RATCHET	2		N	
36-5	JK81-10123A	CLUTCH SPRING	2		N	
36-6	JK81-10513G	SPRING PIN (Ø2X10)	1		N	
36-7	JK81-10511L	E-RING (RE4.0)	4		N	
37	JK81-10170A	POLY BEARING	2		Y	
38	JK81-10513B	MOTOR FEEDING BRACKET ASS'Y	1		Y	
39	JK81-10124A	PAPER MOTOR ASS'Y	1		Y	
39-1	JK81-10125A	GEAR FEED MOTOR	1		Y	
39-2	JK81-10067A	CORE	1		Y	
39-3	JK81-10126A	WIRE (L340, BLU)	1		Y	
39-4	JK81-10127A	WIRE (L340, RED)	1		Y	
39-5	JK81-10070A	MOTOR (RS-380PH)	1		Y	
39-6	JK81-00118A	CONDENSOR (104)	1		Y	
40	JK81-10513D	COVER-1	1		Y	
40-1	-	LABEL STICKER-1	1		N	
40-2	-	LABEL STICKER-2	1		N	
41	JK81-10513E	SPOOL ASS'Y	1		Y	
42	JK81-10513F	DISK	1		Y	
43	JK81-10511Q	PARALLEL PIN (Ø2x10)	1		Y	
44	JK81-10510R	OILLESS METAL_1	4		Y	
45	JK81-10511K	E-RING (RE3.0)	1		Y	
46	JK81-10511L	E-RING (RE4.0)	1		Y	
47	JK81-10511M	E-RING (RE5.0)	4		Y	
48	JK81-10128A	SCREW (PH 3x3)	1		Y	
49	JK81-10513H	SCREW (PS 2.6x4)	2		Y	
50	JK81-10511D	SCREW (T/T PH 3x4)	2		Y	
51	JK81-10513J	SCREW (T/T BH 3x5)	20		Y	
52	JK81-10513K	SCREW (CP 3x6)	4		Y	
53	JK81-10513L	SCREW (T/P PH 3x10)	2		Y	
54	JK81-10511F	PSW (Ø3.6x6x0.5)	6		Y	
55	JK81-10511H	PW (Ø5x10x1.0)	1		Y	
56	JK81-10130A	PHOTO SENSOR (SG-23FH)	2		Y	
57	JK81-10129A	SCREW (PH+ 3X18)	3		Y	
58	JK81-10038A	PRINTER HEAD	1		Y	
59	JK81-10286H	GEAR FEED IDLE_1	1		Y	
60	JK81-10286J	GEAR FEED IDLE_2	1		Y	

7-4 Key Board

7-4-1 Key Board (60Key)

7-4-1-(a) Exploded View

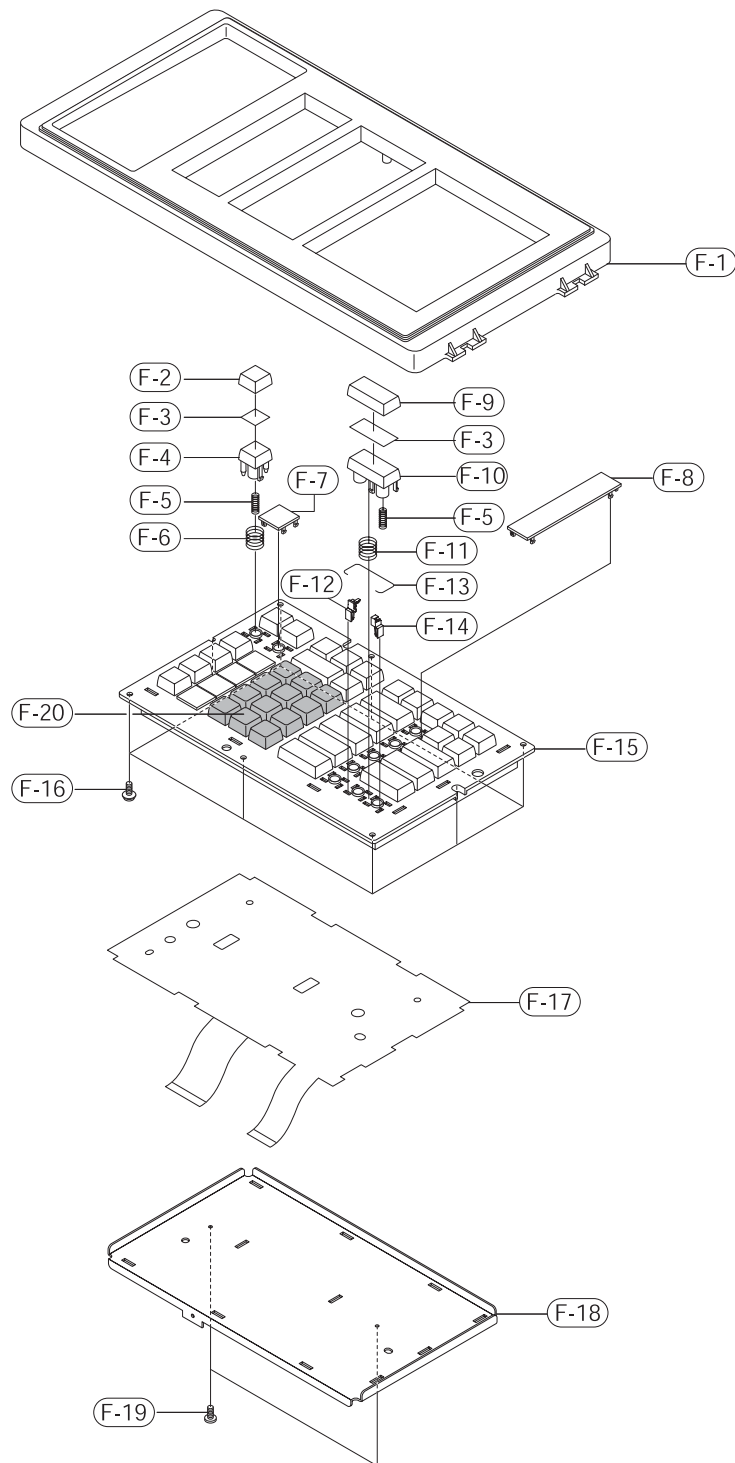


Figure7-6 Key Board (60 Key)

7-4 Key Board

7-4-1-(b) Parts List

No.	Code No.	Description	Specification	Q'ty	Remark	Serviceable
F	JK59-30006A	UNIT-KBD ASS'Y	MEMBRANE,60 KEY:ER-5215	1		Y
F-1	JK72-40230A	PMO-KBD HOUSING	HIPS(VO),60 KEY	1		Y
F-2	JK81-10286D	AS-KEY CAP S(1*1)	PC,S-Z0513-71#01	1		Y
F-3	JK59-30006A	LABEL KEY TOP	-	1		N
F-4	JK81-10286C	AS-KEY TOP S(1*2)	ABS,302KAS-014-01	1		Y
F-5	JK81-10286B	AS-CONTACT SPRING	SUS304,601KAS-001-01	1		Y
F-6	JK81-10286A	AS-RETURN SPRING(1*1)	SWP-A,601KAS-005-01	1		Y
F-7	JK72-40310A	PMO-COVER BLANK(1*1)	HIPS(VO)	1		Y
F-8	JK72-40311A	PMO-COVER BLANK(1*5)	HIPS(VO)	1		Y
F-9	JK81-10286E	AS-KEY CAP L(1*2)	PC,S-Z0513-75#01	1		Y
F-10	JK72-40327A	AS-KEY TOP L(1*1)	ABS,302KAS-032-00	1		Y
F-11	JK61-70301A	AS-RETURN SPRING(1*2)	SWP-A,601KAS-016-01	1		Y
F-12	JK72-40324A	PMO-HOLDER HOOK(A)	POM,541KAS-001-01	1		Y
F-13	JK70-10382A	IPR-SPACER KEYBOARD	SUS304,321KAS-019-90	1		Y
F-14	JK72-40325A	PMO-HOLDER HOOK(B)	POM,541KAS-002-01	1		Y
F-15	JK72-40309A	PMO-FRAME KEYBOARD	POM,60 KEY,101KAS-054-01R	1		Y
F-16	6002-000175	SCREW-TAPPING	PWH,+,2,M3,L8,ZPC(YEL)	8		Y
F-17	JK41-10100F	FPC(60 KEY)	402KAS-101~102-01R	1		Y
F-18	JK70-10379A	IPR-BASE PLATE(60 KEY)	SECC T0.8,501KAS-032-01R	1		Y
F-19	6002-000147	SCREW-TAPPING	PH,+,2,M3,L10,ZPC(YEL)	2		Y
F-20	JK72-40250A	PMO-KEY CAP/1	ABS,302KAS-017-21	1		Y
	JK72-40251A	PMO-KEY CAP/2	ABS,302KAS-017-22	1		Y
	JK72-40252A	PMO-KEY CAP/3	ABS,302KAS-017-23	1		Y
	JK72-40253A	PMO-KEY CAP/4	ABS,302KAS-017-24	1		Y
	JK72-40261A	PMO-KEY CAP/5	ABS,302KAS-018-05	1		Y
	JK72-40254A	PMO-KEY CAP/6	ABS,302KAS-017-26	1		Y
	JK72-40255A	PMO-KEY CAP/7	ABS,302KAS-017-27	1		Y
	JK72-40256A	PMO-KEY CAP/8	ABS,302KAS-017-28	1		Y
	JK72-40257A	PMO-KEY CAP/9	ABS,302KAS-017-29	1		Y
	JK72-40262A	PMO-KEY CAP/0	ABS,302KAS-017-30	1		Y
	JK72-40258A	PMO-KEY CAP/00	ABS,302KAS-017-31	1		Y
	JK72-40259A	PMO-KEY CAP/.	ABS,302KAS-017-32	1		Y

7-4 Key Board

7-4-2 Key Board (90Key)

7-4-2-(a) Exploded View

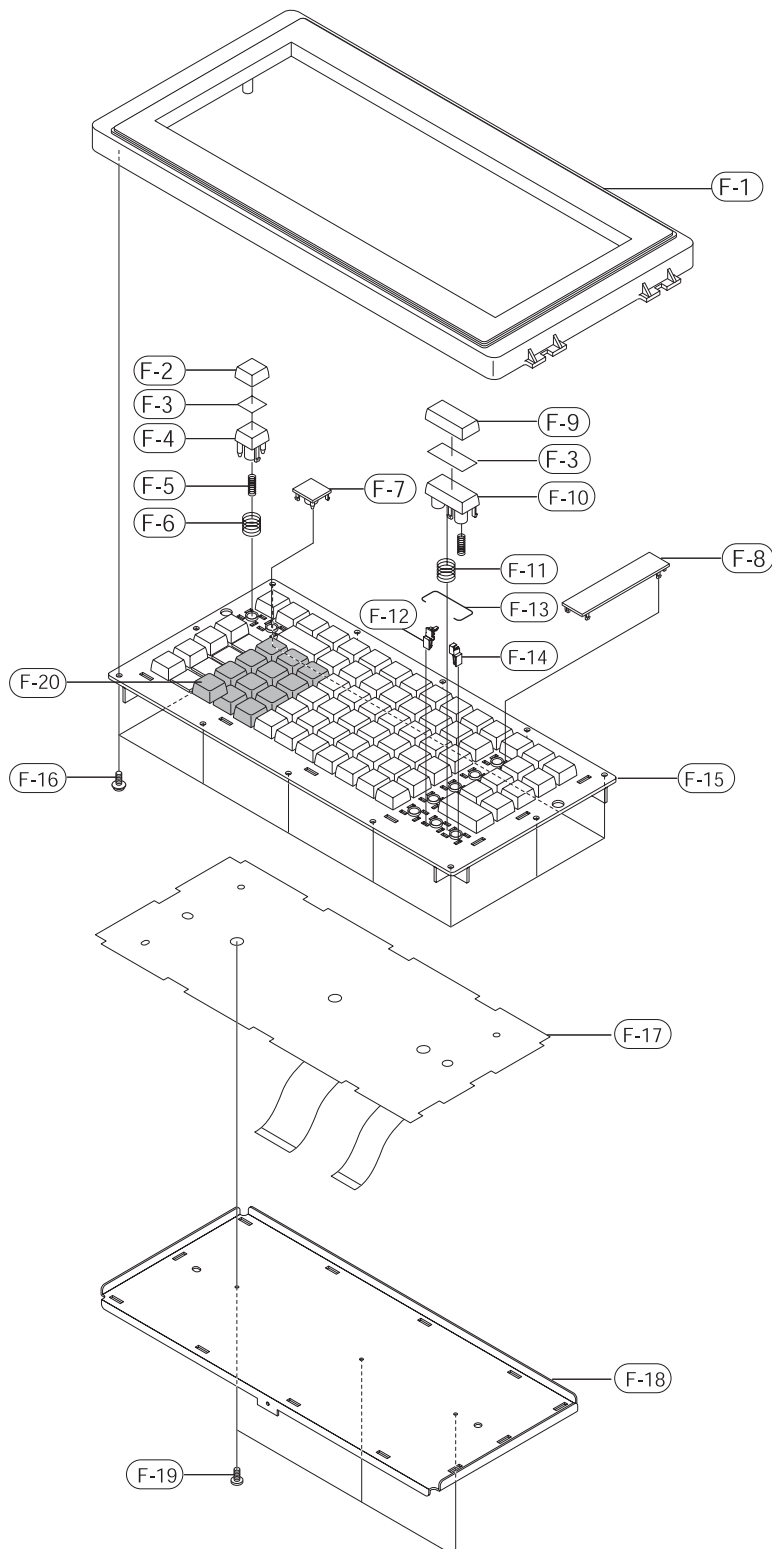


Figure7-7 Key Board (90 Key)

7-4 Key Board

7-4-2-(b) Parts List

No.	Parts No.	Description / Specification	Q'ty	Design-Location	Serviceable	Remark
F	JK59-30004A	UNIT-KBD ASS'Y: MEMBRANE,90 KEY;ER-5240/USA	1		Y	
F-1	JK72-40231A	PMO-KBD HOUSING: HIPS(VO),90 KEY	1		Y	
F-2	JK81-10286D	AS-KEY CAP S(1*1): PC,S-Z0513-71#01	1		Y	
F-3	JK59-30004A	LABEL KEY TOP: ER-5240/USA	1		N	
F-4	JK81-10286C	AS-KEY TOP S(1*1): ABS,302KAS-014-01	1		Y	
F-5	JK81-10286B	AS-CONTACT SPRING: SUS304,601KAS-001-01	1		Y	
F-6	JK81-10286A	AS-RETURN SPRING(1*1): SWP-A,601KAS-005-01	1		Y	
F-7	JK72-40310A	PMO-COVER BLANK(1*1): HIPS(VO)	1		Y	
F-8	JK72-40311A	PMO-COVER BLANK(1*5): HIPS(VO)	1		Y	
F-9	JK81-10286E	AS-KEY CAP L(1*2): PC,S-Z0513-75#01	1		Y	
F-10	JK72-40327A	AS-KEY TOP L(1*2): PC,S-Z0513-75#01	1		Y	
F-11	JK61-70301A	AS-RETURN SPRING(1*2): SWP-A,601KAS-016-01	1		Y	
F-12	JK72-40324A	PMO-HOLDER HOOK(A): POM,541KAS-001-01	1		Y	
F-13	JK70-10382A	IPR-SPACER KEYBOARD: SUS304,321KAS-019-90	1		Y	
F-14	JK72-40325A	PMO-HOLDER HOOK(B): POM,541KAS-002-01	1		Y	
F-15	JK72-40312A	PMO-FRAME KEYBOARD: POM,90 KEY,101KAS-055-01R	1		Y	
F-16	6002-000175	SCREW-TAPPING: PWH,+,2,M3,L8,ZPC(YEL)	12		Y	
F-17	JK41-10100K	FPC(90 KEY): 402KAS-103~104-01R	1		Y	
F-18	JK70-10380A	IPR-BASE PLATE(90 KEY): SECC T0.8,501KAS-032-01R	1		Y	
F-19	6002-000147	SCREW-TAPPING: PH,+,2,M3,L10,ZPC(YEL)	3		Y	
F-20	JK72-40250A	PMO-KEY CAP/1: ABS,302KAS-017-21	1		Y	
	JK72-40251A	PMO-KEY CAP/2: ABS,302KAS-017-22	1		Y	
	JK72-40252A	PMO-KEY CAP/3: ABS,302KAS-017-23	1		Y	
	JK72-40253A	PMO-KEY CAP/4: ABS,302KAS-017-24	1		Y	
	JK72-40261A	PMO-KEY CAP/5: ABS,302KAS-018-05	1		Y	
	JK72-40254A	PMO-KEY CAP/6: ABS,302KAS-017-26	1		Y	
	JK72-40255A	PMO-KEY CAP/7: ABS,302KAS-017-27	1		Y	
	JK72-40256A	PMO-KEY CAP/8: ABS,302KAS-017-28	1		Y	
	JK72-40257A	PMO-KEY CAP/9: ABS,302KAS-017-29	1		Y	
	JK72-40262A	PMO-KEY CAP/0: ABS,302KAS-017-30	1		Y	
	JK72-40258A	PMO-KEY CAP/00: ABS,302KAS-017-31	1		Y	
	JK72-40259A	PMO-KEY CAP/.: ABS,302KAS-017-32	1		Y	

7-4 Key Board

7-4-3 Key Board (160Key)

7-4-3-(a) Exploded View

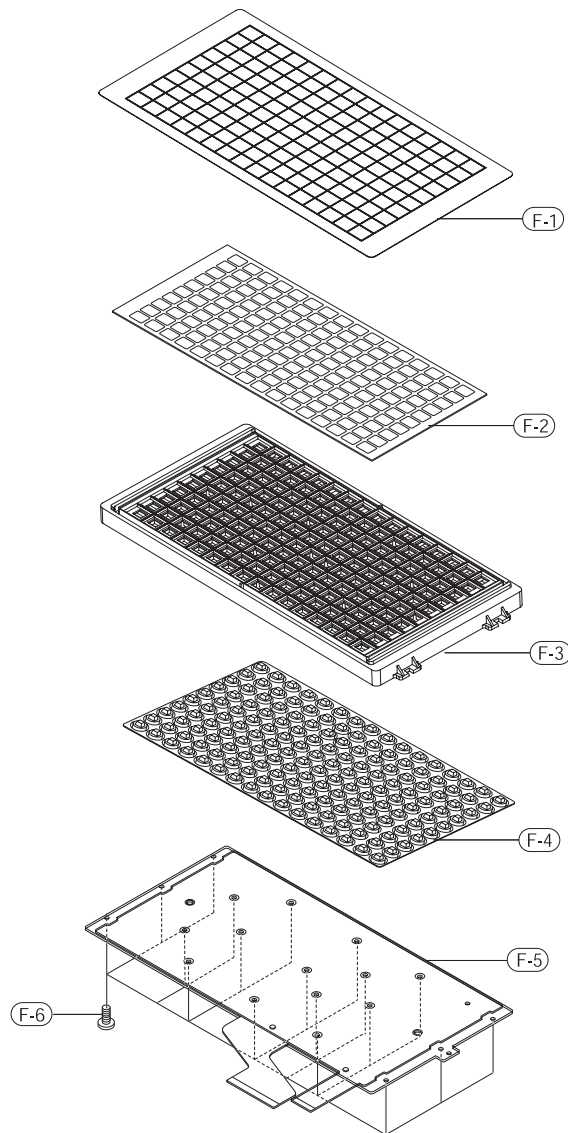


Figure7-8 Key Board (160 Key)

7-4-3-(b) Parts List

No.	Parts No.	Description / Specification	Q'ty	Design-Location	Serviceable	Remark
F	JK59-30016A	UNIT-KEYBOARD,RUBBER-FLAT,160KEY	1		Y	
F-1	JK73-20216A	REX-WATER-PROOF:SILICON,160KEY	1		Y	
F-2	JK68-40012A	LABEL(P)-KBD SHEET: ER-5100, PC T0.125	1		Y	
F-3	JK81-20018A	PMO-HOUSING:HIPS(V0) IV,RUBBER,160KEY	1		Y	
F-4	JK81-20019A	RUBBER-KEY,SILICON,160KEY	1		Y	
F-5	JK81-20020A	ASSY-FPC,RUBBER,160KEY	1		Y	
F-6	JK81-20005A	SCREW-TAP,M2.6*6,	19		Y	

7-5 Drawer

7-5-1 Exploded View

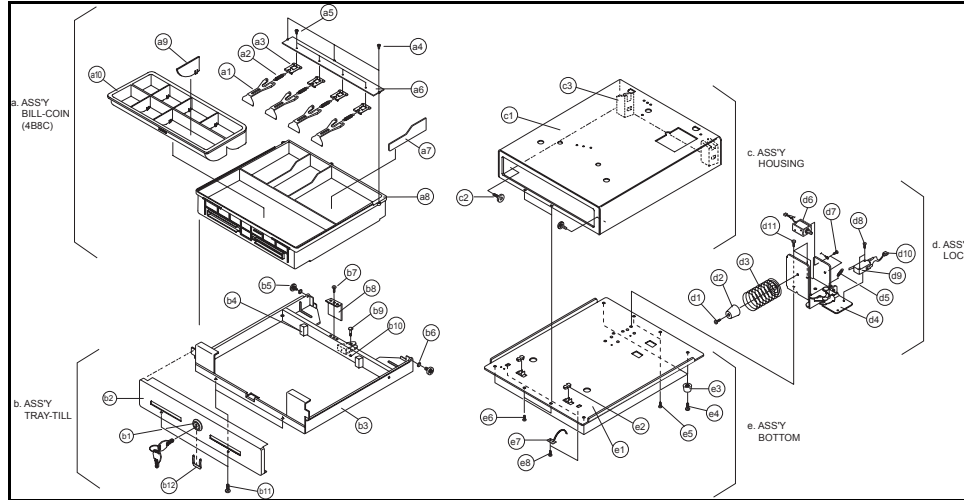


Figure7-9 Drawer (4B/8C)

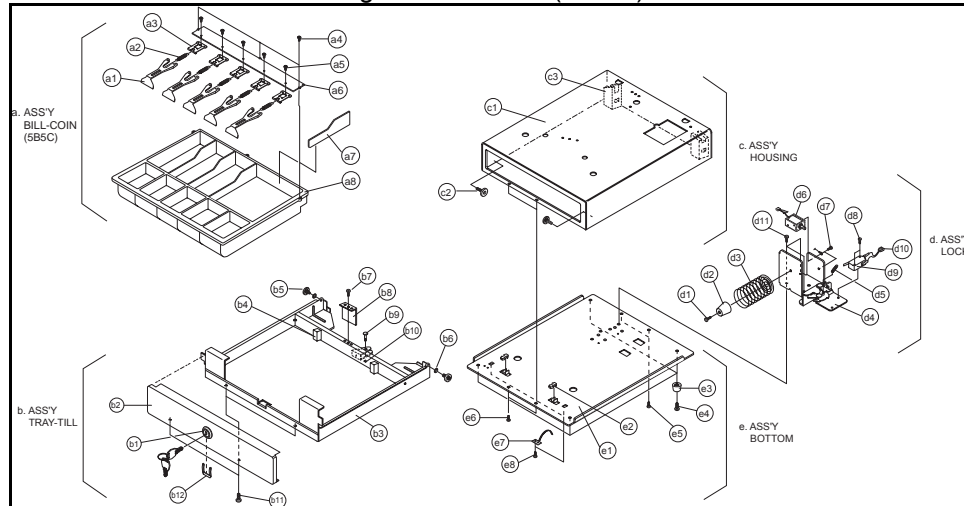


Figure7-10 Drawer (5B/5C)

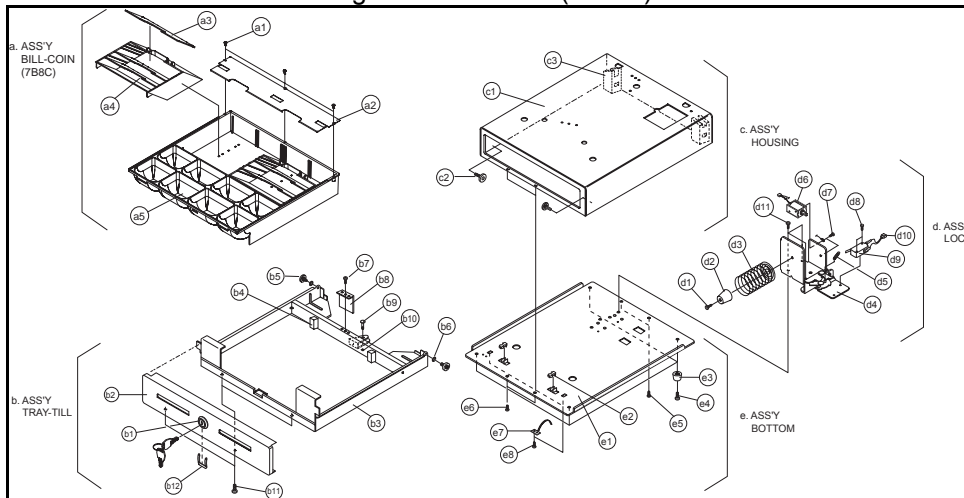


Figure7-11 Drawer (7B/8C)

7-5 Drawer

7-5-2 Parts List

7-5-2-(a) ASS'Y BILL-COIN (4B/8C, 5B/5C)

No.	Code No.	Description / Specification	Q'ty	Design-Location	Serviceable	Remark
a	JK97-20014A	MEA-UNIT BILL COIN: A-TYPE, 4B8C	1		Y	
	JK97-00407A	MEA-UNIT BILL COIN: A-TYPE, 5B5C	1		Y	
a-1	JK72-40267A	PMO-LEVER PRESS: A-TYPE,POM	4		Y	
a-2	6107-000134	SPRING ES: SUS304	4		Y	
a-3	JK70-10314A	IPR-HOLDER LEVER: A-TYPE,T1.2,ZPC	4		Y	
a-4	6002-000175	SCREW-TAPPING: PWH,+2,M3,L8,ZPC(YEL)	3		Y	
a-5	6002-001078	SCREW-TAPPING: PWH,+2,M3,L5	4		Y	
a-6	JK70-10304A	IPR-PLATE HOLDER: A-TYPE,SBHG-1,T1.2	1		Y	
a-7	JK72-40269A	PMO-PANEL PARTITION: A-TYPE,HIPS,BLK	3		Y	
a-8	JK72-20088A	PMO-BILL COIN TILL: A-TYPE,4B8C,HIPS,BLK	1		Y	
	JK72-40268A	PMO-BILL COIN TILL: A-TYPE,5B5C,HIPS,BLK	1		Y	
a-9	JK72-20090A	PMO-COIN PARTITION: A-TYPE,4B8C	6		Y	
a-10	JK72-20089A	PMO-COIN TILL: A-TYPE,4B8C,-	1		Y	

7-5-2-(a) ASS'Y BILL-COIN (7B/8C)

No.	Code No.	Description / Specification	Q'ty	Design-Location	Serviceable	Remark
a	JK97-01103A	MEA-UNIT BILL COIN: A-TYPE, 7B8C	1		Y	
a-1	6002-000175	SCREW-TAPPING: PWH,+2,M3,L8,ZPC(YEL)	3		Y	
a-2	JK70-00068A	IPR-HOLDER PLATE: A-TYPE,SBHG-1, T1.2	1		Y	
a-3	JK72-00083A	PMO-BILL PARTITION: A-TYPE,HIPS,BLK	5		Y	
a-4	JK72-00082A	PMO-BILL TILL: A-TYPE,HIPS,BLK	2		Y	
a-5	JK72-00084A	PMO-BILL COIN TILL: A-TYPE,HIPS,BLK	1		Y	

7-5-2-(b) ASS'Y TRAY-TILL

No.	Code No.	Description / Specification	Q'ty	Design-Location	Serviceable	Remark
b	JK97-01073B	MEA-UNIT TRAY TILL: A-TYPE,5B5C	1		N	
	JK97-01073D	MEA-UNIT TRAY TILL: A-TYPE,4B8C,7B8C(EURO)	1		N	
b-1	JK75-10389A	MEC-LOCK: DRAWER	1		Y	
b-2	JK70-10014A	IPR-PLATE FRONT: A-TYPE,SBC-1,T1.0	1		Y	
	JK70-10014B	IPR-PLATE FRONT: A-TYPE,4B8C,7B8C	1		Y	
b-3	JK75-00025A	MEA-TRAY TILL: A-TYPE,4B8C,7B8C	1		N	
	JK75-00025B	MEA-TRAY TILL: A-TYPE,5B5C	1		N	
b-4	JK73-10203A	RPR-TENSION: DRAWER,SPONGE,BLK	2		N	
b-5	JK75-10386A	MEC-ROLLER: DRAWER,DR-10-B1/ Φ19	2		Y	
b-6	6031-000549	WASHER-PLAIN: IDΦ6.5,ODΦ13, T1.0	2		Y	
b-7	6003-000221	SCREW-TAPTITE: PWH,+2,M4,L8,ZPC(YEL)	1		Y	
b-8	JK70-10324A	IPR-SUPPORT TRAY: DRAWER,SBHG-1,T1.2	1		N	
b-9	JK70-40302A	ICT,SHAFT PIN: A-TYPE	1		N	
b-10	6044-000124	RING-E: IDΦ3,ODΦ7, T0.6,ZPC(BLK),STSC	1		Y	
b-11	6002-001042	SCREW-TAPPING: FH,+2,M3,L6	2		Y	
b-12	JK70-10323A	IPR-PLATE CLIP: DRAWER,SWP,T0.5	1		Y	

7-5 Drawer

7-5-2 Parts List

7-5-2-(c) ASS'Y HOUSING

No.	Code No.	Description / Specification	Q'ty	Design-Location	Serviceable	Remark
c	JK97-01074A	MEA-COVER HOUSING: A-TYPE,BASIC	1		N	
	JK97-01074B	MEA-COVER HOUSING: A-TYPE,NONE HOLE,OPTION	1		N	
c-1	JK75-00026A	MEA-SUB HOUSING: A-TYPE,BASIC	1		N	
	JK75-00026B	MEA-SUB HOUSING: A-TYPE,NONE HOLE,OPTION	1		N	
c-2	JK75-10386A	MEC-ROLLER: DRAWER,DR-10-B1/ Φ19	2		N	
c-3	JK73-20207A	REX-PAD DRAWER: DRAWER,NR,BLK	2		N	

7-5-2-(d) ASS'Y LOCK

No.	Code No.	Description / Specification	Q'ty	Design-Location	Serviceable	Remark
d	JK97-00985A	MEA-UNIT LOCK: A-TYPE,2-LATCH,LONG LEVER	1		Y	
	JK97-00987A	MEA-UNIT LOCK: A-TYPE,2-LATCH,SHORT LEVER	1		Y	
d-1	6002-000157	SCREW-TAPPING: PH,+2,M4,L14,ZPC(YEL)	1		Y	
d-2	JK73-20210A	REX-BUMPER: DRAWER,NR,BLK	1		Y	
d-3	JK61-70100A	SPRING-PUSH: DRAWER,FZN	1		Y	
d-4	JK75-00027A	MEC-LOCK LEVER: A-TYPE,2-LATCH,LONG LEVER	1		N	
	JK75-00027B	MEC-LOCK LEVER: A-TYPE,2-LATCH,SHORT LEVER	1		N	
d-5	6107-001014	SPRING-ES: Φ0.4,D4.8,L18	1		Y	
d-6	JK33-10500A	SOLENOID-DC: A-DRAWER	1		Y	
d-7	6001-000131	SCREW-MACHINE: BH,+2,M3,L6,ZPC(YEL)	2		Y	
d-8	6001-000525	SCREW-MACHINE: PH,+2,M3,L14,ZPC(YEL)	2		Y	
d-9	3405-001013	SWITCH-MICRO: 125V,5A	1		Y	
d-10	JK39-40301R	CBF-HARNESS: 2P,150MM,BRN,1007	1		Y	
d-11	6002-000161	SCREW-TAPPING: PH,+2,M4,L8,ZPC(YEL)	3		Y	

7-5-2-(e) ASS'Y BOTTOM

No.	Code No.	Description / Specification	Q'ty	Design-Location	Serviceable	Remark
e	JK97-01976A	MEA-UNIT BOTTOM: A-TYPE	1		N	
	JK97-01076B	MEA-UNIT BOTTOM: A-TYPE,UNIVERSAL	1		N	
e-1	JK70-10938A	IPR-PLATE BOTTOM: A-TYPE,SBHG-1,T1.0	1		N	
e-2	JK73-40200A	RMO-STOPPER: DRAWER,NR,BLK	2		N	
	JK73-10902A	RMO-STOPPER: DRAWER,NR,BLK,UNIVERSAL	2		N	
e-3	JK61-40200A	RMO-FOOT RUBBER: DRAWER,NR,GRAY,80HB	4		Y	
e-4	6002-000234	SCREW-TAPPING: TH,+2,M4,L16,ZPC(YEL)	4		Y	
e-5	6003-000267	SCREW-TAPTITE: PWH,+2,M3,L8,ZPC(YEL)	6		Y	
e-6	6003-000267	SCREW-TAPTITE: PWH,+2,M3,L8,ZPC(YEL)	2		Y	
e-7	JK70-10401A	IPR-PLATE SPRING: DRAWER,STS304,T0.3	2		Y	
e-8	6003-000267	SCREW-TAPTITE: PWH,+2,M3,L8,ZPC(YEL)	4		Y	

Memo

8 PCB Parts List

8-1 Main PCB (c.f. 10-1 Main PCB Diagram)

No	Part-No	Description / Specification	Q'TY	Design-location	Serviceable	Remark
-	JK92-01054A	ASS'Y PCB ER-5100 (EUROPE)	1	BASIC	Y	
-	JK92-01054B		1	CLERK KEY	Y	
-	JK92-01054C	ASS'Y PCB ER-5100 (USA)	1	BASIC	Y	
-	JK92-01054D		1	CLERK KEY	Y	
-	JK92-01055A	ASS'Y PCB ER-5115 (EUROPE)	1	BASIC	Y	
-	JK92-01055B		1	CLERK KEY	Y	
-	JK92-01055C	ASS'Y PCB ER-5115 (USA)	1	BASIC	Y	
-	JK92-01055D		1	CLERK KEY	Y	
-	JK92-01056A	ASS'Y PCB ER-5140 (EUROPE)	1	BASIC	Y	
-	JK92-01056B		1	CLERK KEY	Y	
-	JK92-01056C	ASS'Y PCB ER-5140 (USA)	1	BASIC	Y	
-	JK92-01056D		1	CLERK KEY	Y	
-	JK92-01057A	ASS'Y PCB ER-5140F (EUROPE)	1	BASIC	Y	
-	JK92-01057B		1	CLERK KEY	Y	
-	JK91-01057C	ASS'Y PCB ER-5140F (USA)	1	BASIC	Y	
-	JK91-01057C		1	CLERK KEY	Y	
-	JK92-01070A	ASS'Y PCB ER-5100F (EUROPE)	1	BASIC	Y	
-	JK92-01070B		1	CLERK KEY	Y	
-	JK92-01070C	ASS'Y PCB ER-5100F (USA)	1	BASIC	Y	
-	JK92-01070D		1	CLERK KEY	Y	
-	JK92-01071A	ASS'Y PCB ER-5115F (EUROPE)	1	BASIC	Y	
-	JK92-01071B		1	CLERK KEY	Y	
-	JK92-01071C	ASS'Y PCB ER-5115F (USA)	1	BASIC	Y	
-	JK91-01071D		1	CLERK KEY	Y	
-	JK92-01064D	ASS'Y PCB ER-5140FI	1	BASIC	Y	
-	0402-000168	DIODE-RECTIFIER;1N5822,40V,3A	1	D2	Y	
-	0402-000208	DIODE-RECTIFIER;EK-04,40V,1.5A	3	D13,D36,D100	Y	
-	0402-000287	DIODE-BRIDGE;GBL01,100V,3A,SIP	1	BD1	Y	
-	0402-000395	DIODE-ZENER;UZP6.2B,5.8-6.6Z	1	ZD3	Y	
-	0502-000240	TR-POWER;KSA614-Y,PNP,25W,TO-220,TP,120	1	Q14	Y	
-	0506-001019	TR-ARRAY;STA471A,NPN,4,4W,SIP	4	TA1,TA2,TA3,TA4	Y	
-	0801-000522	IC-CMOS LOGIC;74HCT541,BUFFER	1	IC12 (CLERK KEY)	Y	
-	0801-000485	IC-CMOS LOGIC;74HCT138,3-TO-8 DECODER	3	IC9,IC10,IC11	Y	
-	0904-001230	IC-PERIPHERAL;82C55,8BIT,DIP,40P	1	IC13	Y	
-	1102-000109	IC-EPROM;27C010,128Kx8BIT,DIP	1	IC5	Y	

8 Electrical Parts List

No	Part-No	Description / Specification	Q'TY	Design-location	Serviceable	Remark
-	1102-000135	IC-EPROM:27C020,256Kx8BIT,DIP,32P,600MIL	1	IC5 (ER-5140FI)	Y	
-	1106-000389	IC-SRAM:681000,128Kx8BIT,DIP,32P,600MIL	1	IC6	Y	
-	1203-000442	IC-POSIFIXED REG.;7812,TO-220	1	Q13	Y	
-	2011-000290	R-NETWORK;1Kohm,5%,1/8W,A,SIP	1	RA1	Y	
-	2011-000539	R-NETWORK;4.7Kohm,5%,1/8W,A,SIP	1	RA2 (CLERK KEY)	Y	
-	2011-000539	R-NETWORK;4.7Kohm,5%,1/8W,A,SIP	1	RA3	Y	
-	2201-000119	C-CERAMIC,DISC:100nF,+80-20%,50V,Y5V,TP	3	104	Y	
-	2401-002144	C-AL:47uF,20%,16V,GP,TP,5x11,5	2	R34 BOTH, R37 BOTH	Y	
-	2401-000230	C-AL:100uF,20%,100V,GP,TP,12.5x20mm	1	CE3	Y	
-	2401-001442	C-AL:470uF,20%,63V,GP,TP,5x12.5	1	CE2	Y	
-	2401-001312	C-AL:4700uF,20%,50V,GP,BK,22x4	1	CE1	Y	
-	2503-001030	C-NETWORK:100PFX8,20%,50V,X7R	1	CA3	Y	
-	2801-003376	CRYSTAL-UNIT;0.032768MHz,20ppm	1	X2	Y	
-	3002-001027	BUZZER-PIEZO:85dB,1.5V,24mA,2.048KHz	1	BUZZER	Y	
-	3601-000261	FUSE-CARTRIDGE:250V,3.15A,TIME-LAG	1	FUSE	Y	
-	3701-000232	CONNECTOR-DSUB;9P,2R,FEMALE,ANGLE	1	CN18	Y	
-	3704-000255	SOCKET-IC:32P,DIP,SN,2.54mm	1	IC5 SOCKET	Y	
-	3708-000215	CONNECTOR-FPC/FFC/PIC:20P,2.54mm	1	CN15 (ER-5100)	Y	
-	3708-000147	CONNECTOR-FPC/FFC/PIC:12P,2.54mm	1	CN15 (ER-5140)	Y	
-	3708-000327	CONNECTOR-FPC/FFC/PIC:8P,2.54mm	1	CN15 (ER-5115)	Y	
-	3708-000327	CONNECTOR-FPC/FFC/PIC:8P,2.54mm	1	CN16	Y	
-	3710-000111	CONNECTOR-SHUNT;2P,1R,2.54mm	1	CN21	Y	
-	3711-000041	CONNECTOR-HEADER;BOX,8P,1R,2.5,RED	1	CN6	Y	
-	3711-000183	CONNECTOR-HEADER;1WALL,2P,1R,3.96mm	2	CN4,CN5	Y	
-	3711-000242	CONNECTOR-HEADER;1WALL,4P,1R,3.96mm	1	CN1	Y	
-	3711-003969	CONNECTOR-HEADER;BOX,2P,1R,2.5,WHT	2	CN11,CN12 (P/SENSOR)	Y	
-	3711-003969	CONNECTOR-HEADER;BOX,2P,1R,2.5,WHT	2	CN2,CN3	Y	
-	3711-001011	CONNECTOR-HEADER;BOX,5P,1R,2.5,WHT	1	CN14 (CLERK KEY)	Y	
-	3711-001133	CONNECTOR-HEADER;BOX,8P,1R,2.5,WHT	1	CN17	Y	
-	3711-001475	CONNECTOR-NOWALL,3P,1R,2.54mm	2	CN21,CN25	Y	
-	3711-001962	CONNECTOR-NOWALL,30P,2R	1	CN13 (FISCAL)	Y	
-	4302-000126	BATTERY-NICD(2ND):3.6V(1.2Vx3),60Mah	1	BATTERY	Y	
-	JC68-10564A	LABEL(P)-PROTECTOR;SLB-3108H,ART	1	EPROM LABEL	Y	
-	JK13-10050A	IC ASIC:ER-5200,SCR60K,QFP,100P	1	IC4	Y	
-	JK27-60100D	COIL FILTER;ER-350,140 UH	1	COIL	Y	
-	JK39-40512A	CBF HARNESS:ER-4615F,-,UL1007,70mm,GRN	1	A TO A (TOP SIDE)	Y	
-	JK39-40541A	CBF HARNESS-MAIN:ER-4615,1R,UL1015,220m	2	GND1,GND2	Y	
-	JK39-40306D	CBF-HARNESS;ER-4615FP,UL1007	1	CN7/CN8	Y	

8 Electrical Parts List

No	Part-No	Description / Specification	Q'TY	Design-location	Serviceable	Remark
-	JK39-40306C	CBF-HARNESS;ER-4615FP,UL1007	1	CN9	Y	
-	JK39-40550A	CBF-HARNESS-JUMPER;ER-350F,WIR	1	SOLDER SIDE (IC5 30P~IC4 88P)	Y	
-	JK68-10232A	LABEL(P)-BATTERY;ER-4915(CRS)	1	BATTERY WARNING	Y	
-	JK73-10207A	RPR-PAD;ER-220N,SPONGE,BLK	1	CLOCK B'D	Y	
-	0502-000234	TR-POWER;KSA1010Y,PNP,40W,TO-220	1	Q3	Y	
-	0502-000395	TR-POWER;KSD73-Y,NPN,30W,TO-220,120-240	1	Q2	Y	
-	6002-000175	SCREW-TAPPING;PWH,+,2,M3,L8,ZP	2	Q2,Q3	Y	
-	6203-000107	HEAT SINK;NONE,T2,W17,L22,H45	2	Q2,Q3	Y	

8 Electrical Parts List

8-2 Main Auto

No	Part-No	Description / Specification	Q'TY	Design-location	Serviceable	Remark
-	JK94-01065A	PBA MAN-AUTO	1		N	
-	0401-00005	DIODE-SWITCHING;1N4148,75V,300	22	D1,D1~35,D101	Y	
-	0402-000129	DIODE-RECTIFIER;1N4003,200V,1A	7	D3,D5~9,D14	Y	
-	0402-000208	DIODE-RECTIFIFR;EK-04,40V,1.5A	6	D10~13,D36,D100	Y	
-	0403-000343	DIODE-ZENER;UZ3,9B3.7-4.1V,50	1	ZD2	Y	
-	0403-000537	DIODE-ZENER;1N4749A,5%,1W,DO-4	1	ZD1	Y	
-	0501-000399	TR-SMALL SIGNAL;KSC945-G,NPN,2	11	Q1/4~6/9~12/15~17	Y	
-	0801-000967	IC-CMOS LOGIC; 74HCT138,3-TO-8	1	IC9	Y	
-	0909-00111	IC-REAL TIME CLOCK;5C15,4BIT,D	1	IC8	Y	
-	1006-000137	IC-DRIVER/RECEIVER;232,DIP,16P	1	IC14	Y	
-	1202-000103	IC-VOLTAGE COMP.;232,DIP,16P	1	IC2	Y	
-	1203-000391	IC-DC/DC CONVERTER;34063,DIP,8	1	IC1	Y	
-	1206-000139	IC-TIMER;NE555CN,DIP,8P,250MIL	1	IC3	Y	
-	2001-000027	R-CARBON;100ohm,5%,1/4W,AA,TP,	3	R58~60	Y	
-	2001-000034	R-CARBON;220ohm,5%,1/4W,AA,TP,	4	R48,R51,R53,R76	Y	
-	2001-000036	R-CARBON;330ohm,5%,1/4W,AA,TP,	1	R82	Y	
-	2001-000042	R-CARBON;1Kohm,5%,1/4W,AA,TP,	13	R4/11/13/20/38 ~43/67/80/81	Y	
-	2001-000045	R-CARBON;1.8ohm,5%,1/4W,AA,TP,	1	R79	Y	
-	2001-000047	R-CARBON;2.2ohm,5%,1/4W,AA,TP,	4	R35/R36R61/87	Y	
-	2001-000055	R-CARBON;4.7Kohm,5%,1/4W,AA,TP,	9	R44~46/54/62~65/68	Y	
-	2001-000055	R-CARBON;4.7Kohm,5%,1/4W,AA,TP,	6	R9/16~17/22/34/37	Y	
-	2001-000055	R-CARBON;4.7Kohm,5%,1/4W,AA,TP,	8	R1/24/31/93~97	Y	
-	2001-000055	R-CARBON;4.7Kohm,5%,1/4W,AA,TP,	7	R70/89~92/98/99	Y	
-	2001-000055	R-CARBON;4.7Kohm,5%,1/4W,AA,TP,	1	R73 (ER-5140 FI)	Y	
-	2001-000060	R-CARBON;6.8Kohm,5%,1/4W,AA,TP,	2	R21/77	Y	
-	2001-000060	R-CARBON;6.8Kohm,5%,1/4W,AA,TP,	1	R73 (ER-5140 FI)	Y	
-	2001-000065	R-CARBON;10Kohm,5%,1/4W,AA,TP,	9	R8/25~28/47/49/56/30	Y	
-	2001-000065	R-CARBON;10Kohm,5%,1/4W,AA,TP,	8	R69/71~75/86/88	Y	
-	2001-000073	R-CARBON;33Kohm,5%,1/4W,AA,TP,	1	R18	Y	
-	2001-000076	R-CARBON;47Kohm,5%,1/4W,AA,TP,	3	R5/R50/52	Y	
-	2001-000081	R-CARBON;68Kohm,5%,1/4W,AA,TP,	3	R10/23/100	Y	
-	2001-000113	R-CARBON;18Kohm,5%,1/4W,AA,TP,	1	R19	Y	
-	2001-000855	R-CARBON;560ohm,5%,1/4W,AA,TP,	3	R3/55/57	Y	
-	2001-000876	R-CARBON;6.2Kohm,5%,1/4W,AA,TP,	2	R14/R15	Y	
-	2001-000915	R-CARBON;680ohm,5%,1/4W,AA,TP,	1	R12	Y	
-	2004-000284	R-CARBON;100ohm,5%,1/4W,AA,TP,	1	R7	Y	

8 Electrical Parts List

-	2004-000825	R-METAL;12Kohm,1%,1/4W,AA,TP,2	2	R6/R8	Y	
-	2005-000210	R-METAL;36Kohm,1%,1/4W,AA,TP,2	1	R2	Y	
-	2201-000013	C-CERAMIC,DISC;470pF,10%,50V	7	CC3/11/15/16/52/62/63	Y	
-	2201-000021	C-CERAMIC,DISC;100nF,+80-20%,5	10	CC2,4.6.8~10,19 ~20,22,100	Y	
-	2201-000021	C-CERAMIC,DISC;100nF,+80-20%,5	5	CC66/67/68/69/64	Y	
-	2201-000021	C-CERAMIC,DISC;100nF,+80-20%,5	5	CC37,38,40,12,50	Y	
-	2201-000021	C-CERAMIC,DISC;100nF,+80-20%,5	5	CC25,26,28~30	Y	
-	2201-000021	C-CERAMIC,DISC;100nF,+80-20%,5	5	CC43~47	Y	
-	2201-000138	C-CERAMIC,DISC;100pF,10%,50V,Y	10	CC51,53~61	Y	
-	2201-000138	C-CERAMIC,DISC;100pF,10%,50V,Y	10	CC27,31, CC71~75 ~34,41,42,48,70,77	Y	
-	2201-000163	C-CERAMIC,DISC;10nF,79.8,50V,Y	1	CC21	Y	
-	2201-000232	C-CERAMIC,DISC;150pF,10%,50V,Y	1	CC1	Y	
-	2201-000464	C-CERAMIC,DISC;30pF,10%,50V,Y	2	CC35,36	Y	
-	2201-000776	C-CERAMIC,DISC;47nF,+80-20%,50	2	CC23/24	Y	
-	2201-000579	C-CERAMIC,MLC-AXIAL;100nF,+80-	2	CC17,CC18	Y	
-	2301-000010	C-FILM,PEF;100nF,5%,100V,TP,11	4	CM1~4	Y	
-	2401-000023	C-AL;1uF,20%,16V,GP,TP,6.3x1	1	CE10	Y	
-	2401-000025	C-AL;100uF,20%,16V,GP,TP,6.3x1	3	CE11/17/19	Y	
-	2401-000025	C-AL;100uF,20%,16V,GP,TP,6.3x1	1	CE9	Y	
-	2401-000783	C-AL;220uF,20%,16V,GP,TP,6.3x1	1	CE9 (ER-5140 FI)	Y	
-	2401-000025	C-AL;100uF,20%,16V,GP,TP,6.3x1	3	CE20/21/23	Y	
-	2401-000027	C-AL;4.7uF,20%,16V,GP,TP,6.3x1	3	CE7/13/14	Y	
-	2401-000028	C-AL;10uF,20%,16V,GP,TP,6.3x1	3	CE12/15/16	Y	
-	2401-000966	C-AL;22uF,20%,16V,GP,TP,6.3x1	2	CE6/22	Y	
-	2401-001363	C-AL;470uF,20%,16V,GP,TP,6.3x1	2	CB5/8	Y	
-	3901-000183	FILTER-EMI ON BOARD;50V,1A,-,1	3	CB1~3	Y	
-	3301-000299	CORE-FERRITE BEAD;AA,3.6x5.0mm	6	FB36/37/39/40/43/44	Y	
-	3301-000299	CORE-FERRITE BEAD;AA,3.6x5.0mm	15	FB9/21~34	Y	
-	3301-000299	CORE-FERRITE BEAD;AA,3.6x5.0mm	3	FB18/20/46	Y	
-	3301-000344	CORE-FERRITE BEAD;AA,3.6x5.0mm	4	FB35,41,42,45	Y	
-	3301-000344	CORE-FERRITE BEAD;AA,3.6x5.0mm	5	FB1/2/4/7/8	Y	
-	3301-000344	CORE-FERRITE BEAD;AA,3.6x5.0mm	8	FB10-17	Y	
-	3602-000001	FUSE-CLIP;-,-,30mohm	2	Fuse	Y	
-	BH39-40305U	CBF-HARNESS;52MM,,,AWG22(0.6P	72	J43~107/111~116/121	Y	
-	BH39-40305U	CBF-HARNESS;52MM,,,AWG22(0.6P	17	J23~27/29/30/32~41	Y	
-	BH39-40305U	CBF-HARNESS;52MM,,,AWG22(0.6P	18	J1~4/5~7/10~15/17~21	Y	
-	JK41-10528A	PCB-MAIN;ER-5100(EUROPE),FR-1,	1	MAIN PCB	Y	

8-3 Clock PCB (c.f. 10-2 Clock PCB Diagram)

No	Part-No	Description / Specification	Q'TY	Design-location	Serviceable	Remark
-	JK92-01062A	CLOCK BOARD:ER-5100,WORLD	1		Y	
-	2007-000308	R-CHIP:10OHM,5%,1/10W,DA,TP,2012	1	CR5	Y	
-	2001-000477	R-CHIP:1MOHM,5%,1/10W,DA,TP,2012	1	CR1	Y	
-	2007-000493	R-CHIP:2.2KOHM,5%,1/10W,DA,TP,2012	1	CR2	Y	
-	2007-000941	R-CHIP:47KOHM,5%,1/10W,DA,TP,2012	2	CR3,CR4	Y	
-	2007-001155	R-CHIP:750OHM,5%,1/10W,DA,TP,2012	1	CR6	Y	
-	2203-000192	C-CERAMIC,CHIP:100nF,+80-20%,50V	1	CCC5	Y	
-	2203-000634	C-CERAMIC,CHIP:0.022nF,5%,50V	3	CCC1,CCC2,CCC4	Y	
-	2203-000938	C-CERAMIC,CHIP:0.47nF,5%,50V	1	CCC3	Y	
-	3301-000325	CORE-FERRITE BEAD:AB,3.2x2.5x1.3mm	2	CBD1,CBD2	Y	
-	4701-001020	IC-FREQ-ATTENUATOR:5-80MHz,15dB	1	CU1	Y	
-	2401-000913	C-AL:22uF,20%,16V,GP,TP,5x11,5	1	CCE1	Y	
-	2802-001030	RESONATOR-CERAMIC:22.11MHz,0.5%	1	CX1	Y	
-	JK41-10519A	PCB-CLOCK;ER-5100,,ER-4	1		Y	

8-4 Front Display PCB (c.f. 10-3 Front Display PCB diagram)

No	Part-No	Description / Specification	Q'TY	Design-location	Serviceable	Remark
-	JK92-01230A	PBA SUB-DISPLAY:ER-5100/5200,STD	1	ASSY	Y	
-	3711-001133	CONNECTOR-HEADER:BOX,8P,1R,2.5mm,ST	1	CN1	Y	
-	3711-002002	CONNECTOR-HEADER:-,22P,2R,2mm,ST	1	CN2	Y	
-	JK07-00005A	DISPLAY VFD-DC10G:FUTABA,10-LT-50GK	1	FUTABA VFD/10 DIGIT	Y	
-	JK39-00034A	CONNECT WIRE-350 DISPLAY:ER-350,FLAT	1	DISPLAY TO MAIN	Y	
-	JK73-10207A	RPR-PAD:ER-220N,SPONGE,-,BLK,-	2	PAD(T5.0)	Y	
-	1003-001381	IC-VFD:HV5812P,DIP,28P,540MIL,-,ST,PLA	1	U1	Y	
-	JK41-10548A	PCB-DISPLAY:ER-5100/5200,FR-1,1L,T1.6	1	FUTABA VFD/10 DIGIT	Y	
-	0402-000129	DIODE-RECTIFIER:1N4003,200V,1A,DO-41,TP	1	D1	Y	
-	0402-000208	DIODE-RECTIFIER:EK-04,40V,1.5A,DO-41	1	D2	Y	
-	JC39-40511A	CBF HARNESS:ML-80,JUMPER,AWG22,52mm	18	JP1,JP2,JP3,JP4,JP5 JP6,JP7,JP8,JP9,JP10 JP11,JP12,JP13,JP14 JP15,JP16,JP17,JP18	Y	
-	2202-000632	C-CERAMIC,MLC-AXIAL:100nF,20%,50V,Z5U	2	C1,C2	Y	

8-5 Rear Display PCB (c.f. 10-4 Rear Display PCB Diagram)

No	Part-No	Description / Specification	Q'TY	Design-location	Serviceable	Remark
-	JK92-01231A	PBA SUB-TURRET:ER-5100/5200,STD	1	REAR DISPLAY ASSY	Y	-
-	JK39-40002A	CBF HARNESS:ER-220N,-,UL1061,400MM,BLK	1	DISPLAY TO MAIN	Y	-
-	JK07-00005A	DISPLAY VFD-DC10G:FUTABA,10-LT-50GK	1	FUTABA VFD/10 DIGIT	Y	-
-	3711-002812	CONNECTOR-HEADER:BOX,11P,1R,2mm,ST	2	CN1,CN2	Y	-
-	JK73-10207A	RPR-PAD:ER-220N,SPONGE,-,BLK	2	PAD	Y	-
-	JC39-40511A	CBF HARNESS:ML-80,JUMPER,AWG22,52mm	6	JP1~JP6	Y	-
-	JK41-10548B	PCB-TURRET:ER-5100/5200,FR-1,1L,T1.6	1	FUTABA VFD/10 DIGIT	Y	-

8-6 Fiscal PCB (c.f. 10-5 Fiscal PCB Diagram)

8-6-1 EPROM (27C010)

No	Part-No	Description / Specification	Q'TY	Design-location	Serviceable	Remark
-	JK92-00130G	PBA SUB-FISCAL BOARD	1		Y	
-	1102-000109	IC-EPROM:27C010,128Kx8BIT,DIP,32P	1	U1	Y	
-	2011-000539	R-CETWORK, 4.7KOHM, 5%, 1/8W, SIP, 9P	1	RA1	Y	
-	JK39-40305B	CBF-HARNESS ;UL1007, 120, WHT / BLU	1	FISCAL HARNESS	Y	
-	0402-000208	DIODE-RECTIFIER, EK-04, 40V, 1.5A	2	D1,D2	Y	
-	0403-000141	DIODE-ZENOR, 1N4735A, 6.2V, 5%, 1W	1	D3	Y	
-	0501-000399	TR-SMALL SIGNAL, KSC945-G, NPN	1	Q1	Y	
-	2001-000044	R-CARBON, 1.2KOHM, 5%, 1/4W	1	R4	Y	
-	2001-000055	R-CARBON, 4.7KOHM, 5%, 1/4W	2	R1,R3	Y	
-	2001-000855	R-CARBON, 560OHM, 5%, 1/4W	1	R2	Y	
-	2202-000630	C-CERAMIC,MLC-AXIAL:100nF,10%,50V	1	C1	Y	
-	JK41-10531A	PCB-FISCAL, FR-4, 2L, T1.6	1		Y	

8-6-2 EPROM (27C512)

No	Part-No	Description / Specification	Q'TY	Design-location	Serviceable	Remark
-	JK92-00131A	PBA SUB-FISCAL BOARD	1		Y	
-	1102-000173	IC-EPROM ;27C512, 64K*8BIT, DIP, 28P	1	U1	Y	
-	2011-000539	R-NETWORK, 4.7Kohm, 5%, 1/8W, SIP, 9P	1	RA1	Y	
-	2202-000630	C-CERAMIC,MLC-AXIAL:100nF,10%,50V	1	C1	Y	
-	JK39-40305B	CBF-HARNESS ; UL1007, 120, WHT / BLU	1	FISCAL HARNESS	Y	
-	JK41-10531A	PCB-FISCAL: FR-4, 2L, T1.6	1		Y	

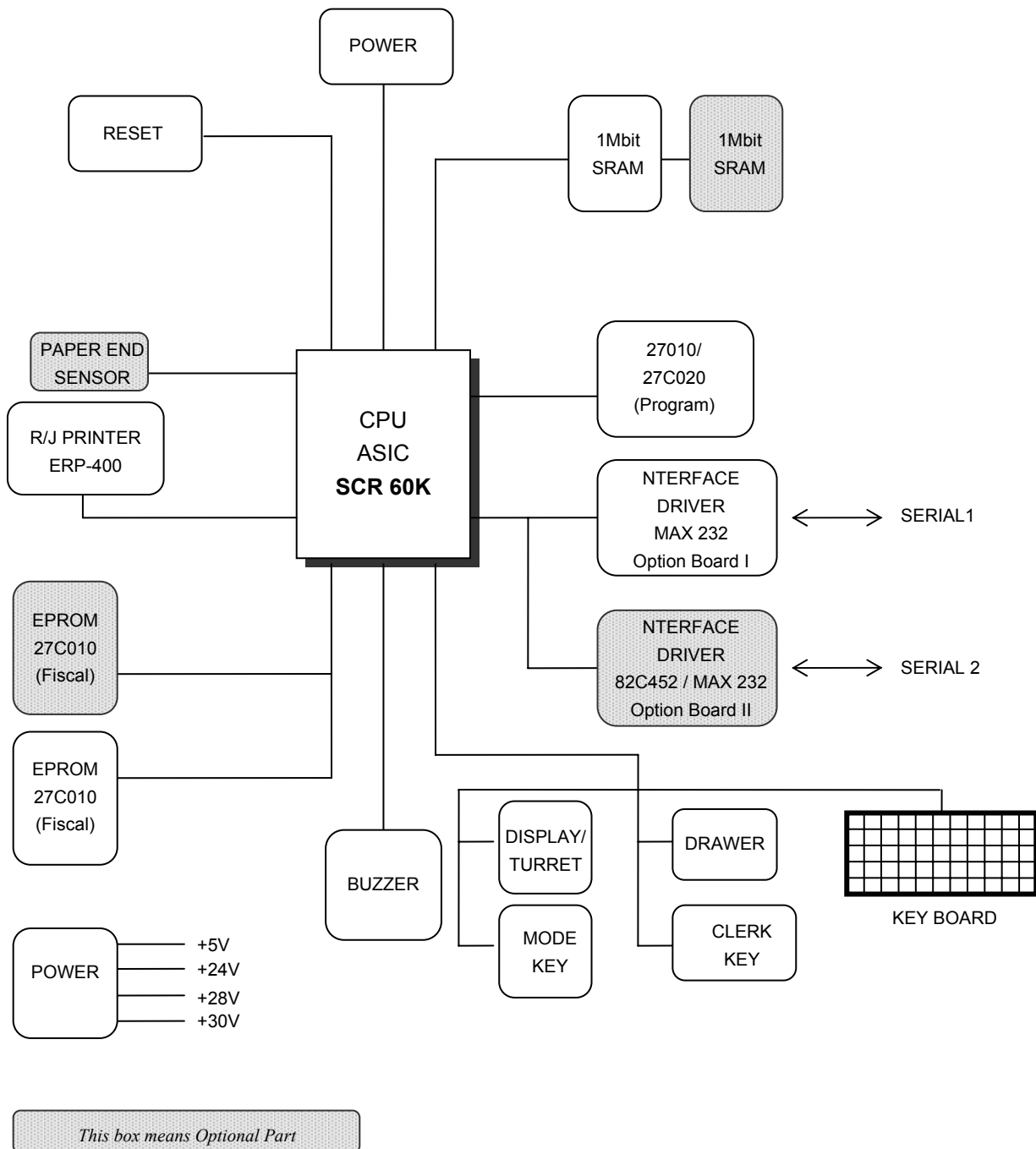
8 Electrical Parts List

8-7 Clock PCB (c.f. 10-2 Clock PCB Diagram)

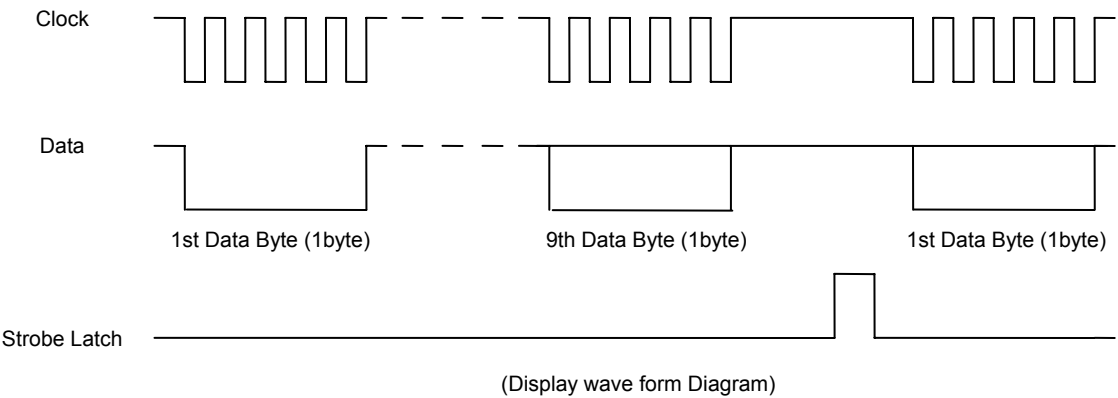
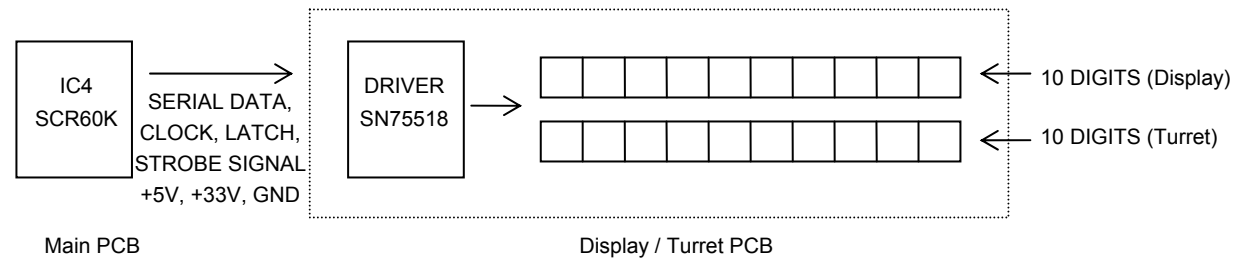
No	Part-No	Description / Specification	Q'TY	Design-location	Serviceable	Remark
-		PCB-OPTION,E-5100,FR-4,T1.6	1		Y	
-	0501-000399	TR-SMALL SIGNAL;KSC945,NPN	2	IQ1.2	Y	
-	0904-000519	IC-PERIPHERAL,82C452A,8BIT	1	IC15	Y	
-	2804-000325	OSC-CLOCK,8MHz,100PPM	1	IX1	Y	
-	1006-000137	IC-DRIVER/RECEIVER,232,DIP,16P	2	IX14,16	Y	
-	3701-000232	CONNECTOR-DSUB,9P,2R,FEMAL	2	XN18,20	Y	
-	3301-000344	CORE-FERRITE BEAD;AA	8	IFB1-8	Y	
-	2201-000021	C-CERAMIC DISC;100nF	7	ICC3,4,7,8,9,10,11	Y	
-	2201-000013	C-CERAMIC DISC;470pF	4	ICC1,2,5,6	Y	
-	2201-000326	C-CERAMIC DISC;2.2Nf	2	ICC12,13	Y	
-	2001-000065	R-CARBON;10Kohm,1/4W,AA	3	IR1,3,4	Y	
-	2001-000042	R-CARBON;1Kohm,1/4W,AA	1	IR2	Y	
-	2401-000028	C-AL;10uF,20%,5V	6	ICE1,4,5,6,9,10	Y	
-	2401-000027	C-AL;4.7uF,20%,5V	4	ICE2,3,7,8	Y	
-	2401-000025	C-AL;100uF,20%,5V	1	ICE11	Y	
-	JK39-40305X	CBF-HARNESS;150MM,22P	1	CN22	Y	
-	JK39-40024A	CBF-HARNESS;350MM/GYN/YE	1	CN20 SIDE	Y	
-	JK39-40305G	CBF-HARNESS;250MM/GYN/YE	1	CN18 SIDE	Y	
-	JK39-40523A	CBF-HARNESS;SRP-250,BLU/BLU	1	CN23	Y	

9 Block Diagram

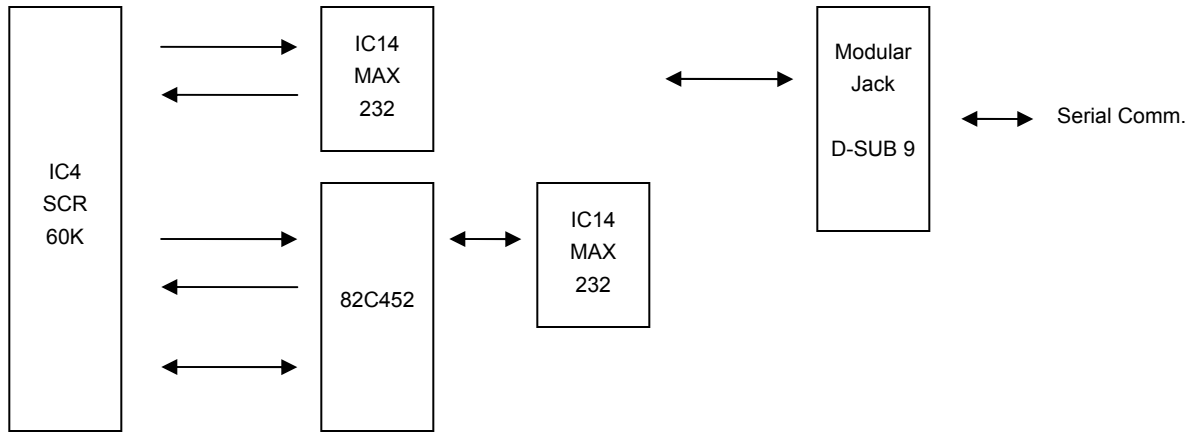
9-1 Main



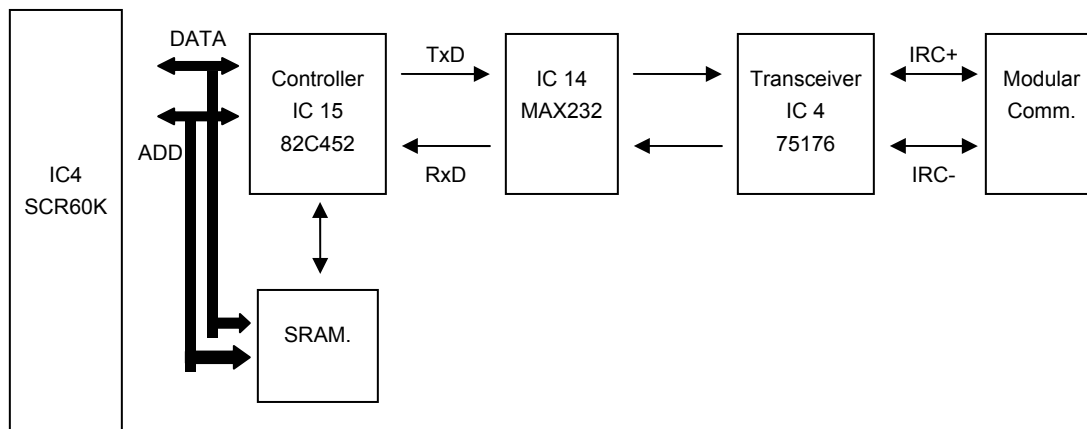
9-2 front/Rear display Driver



9-3 Serial Communications

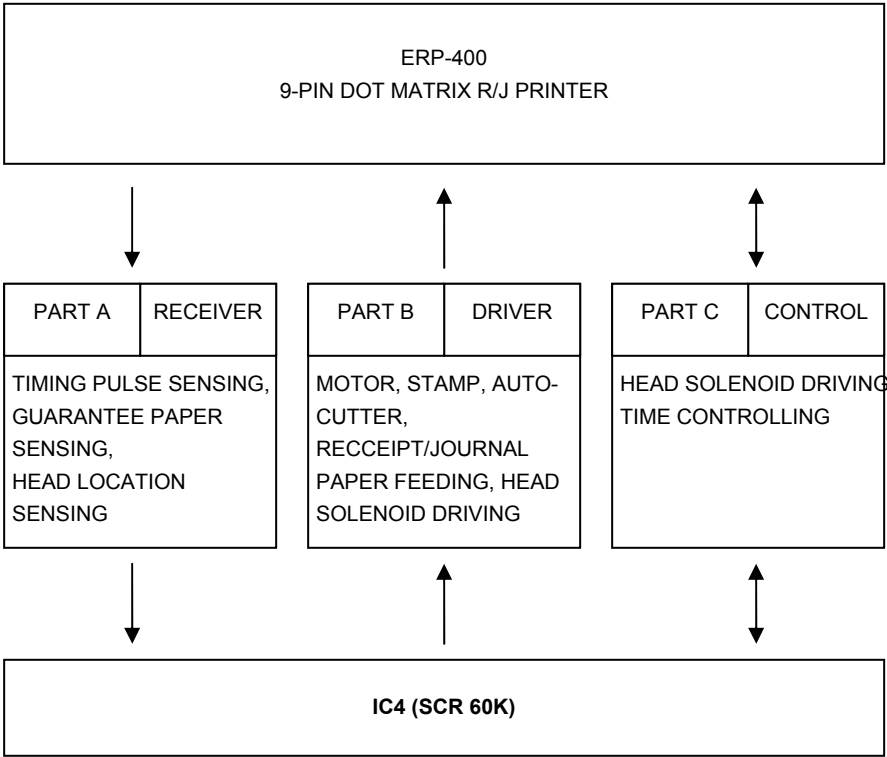


9-4 IRC Communications (Optional Board II)

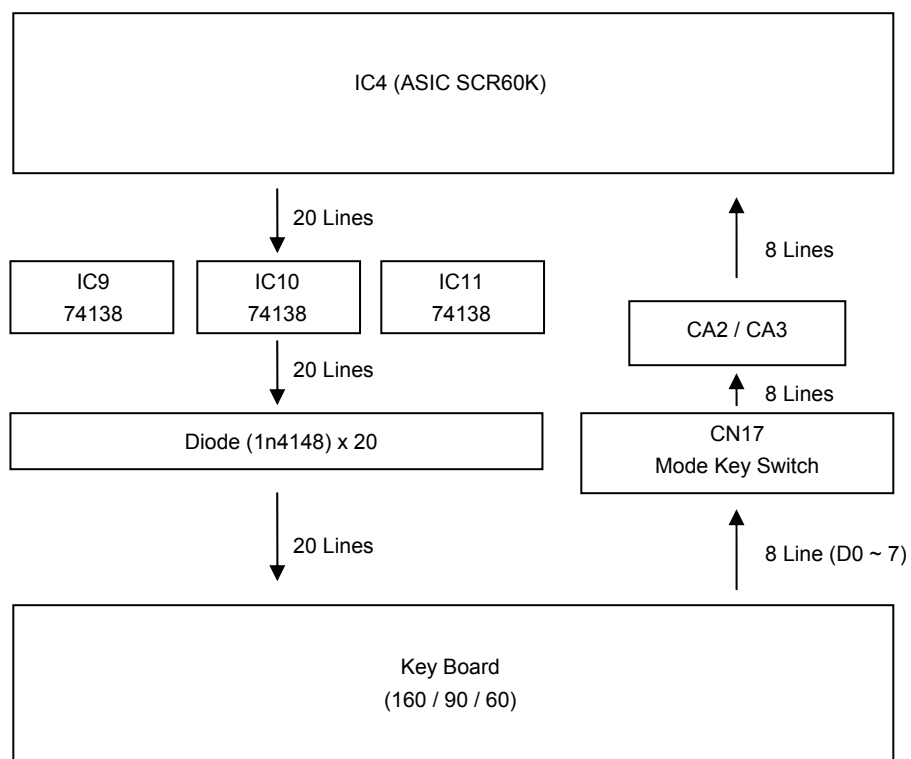


9-5 Printer driver

Note: When Head driving voltage is High, Head driving time becomes Short.
When Head driving voltage is low, Head driving time becomes Long.

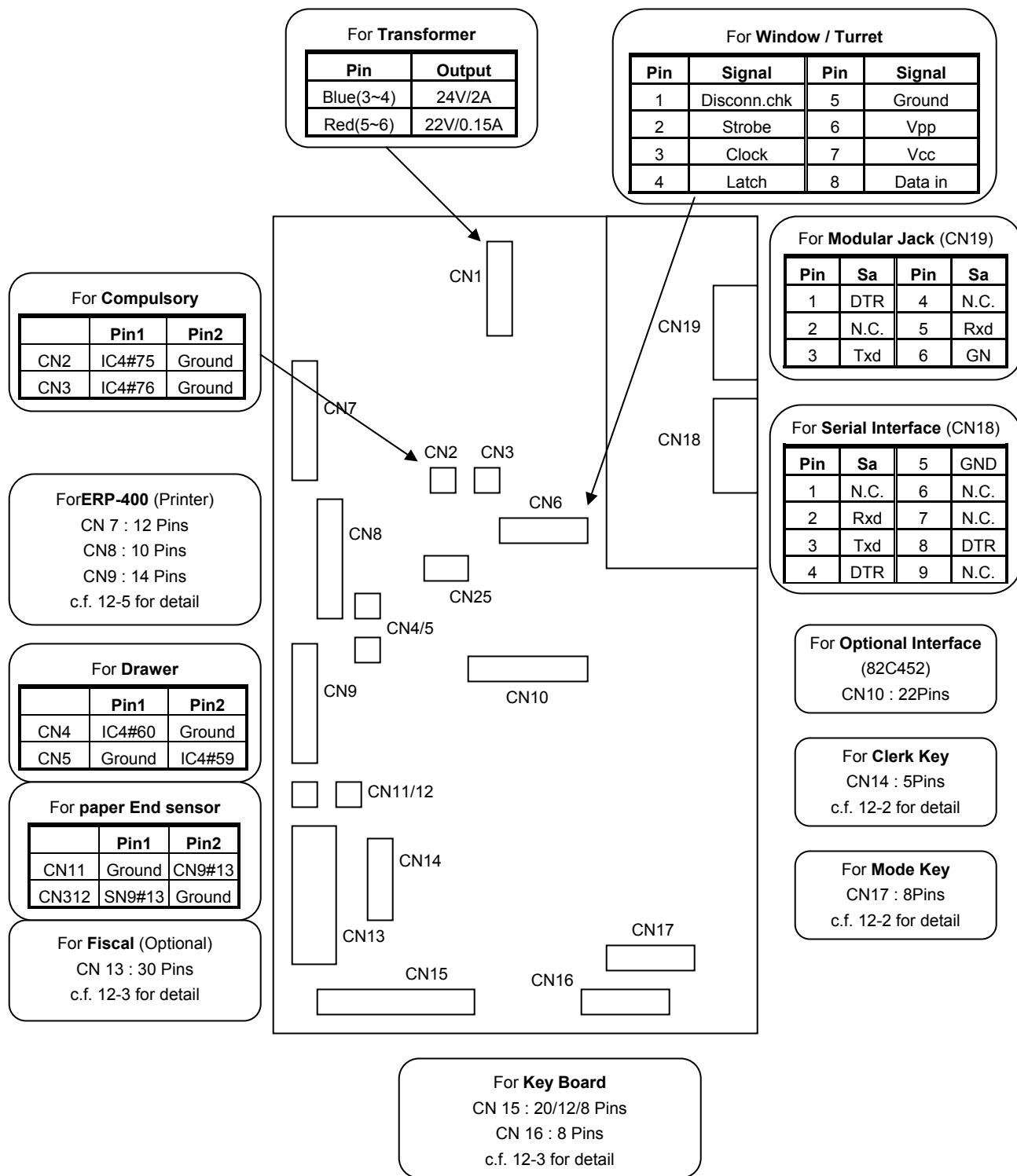


9-6 keyboard



Memo

10 Wiring Diagrams



The Pin #1 is the Pin at left or at top

MEMO

11 ASIC SCR60K Pin Assignments

Pin No.	Name	Description	Pin No.	Name	Description
1	RD	Read	51	INT1	CN9 #3 (Timing Signal)
2	RTC	Real Time clock	52	PR1	CN8 #4 (Ayto Cutter)
3	RAM2	Chip Select	53	PR2	CN8 #8 (Motor)
4	RAM1	Chip select	54	PR3	CN8 #3 (Stamp)
5	P2	A16 (for 1M RAM)	55	PR4	CN8 #2 (Receipt Feed)
6	P4	RAM/CS	56	PR5	CN8 #1 (Journal Feed)
7	P3	A16 (for 1M ROM)	57	P8_1	CN13 #30 (Fiscal Reset), IC3 #4
8	A15	Address Bus	58	W1	NE555 Timer Trigger
9	A14	Address Bus	59	W3	CN5 (Drawer)
10	A12	Address Bus	60	W4	CN4 (Drawer)
11	A13	Address Bus	61	HD9	CN7 #12 (Head)
12	A7	Address Bus	62	HD8	CN7 #11
13	A8	Address Bus	63	HD7	CN7 #10
14	A9	Address Bus	64	HD6	CN7 #9
15	VDD1	+5V	65	VDD9	+5V
16	A9	Address Bus	66	RAM1_1	Open
17	GND3	0V (ground)	67	GND12	0V (Ground)
18	A5	Address Bus	68	HD5	CN7 #8
19	A11	Address Bus	69	HD4	CN7 #4
20	A4	Address Bus	70	HD3	CN7 #3
21	PSEN	ROM/CS	71	HD2	CN7 #2
22	A3	Address Bus	72	HD1	CN7 #1
23	A10	Address Bus	73	XTAL1	Crystal 22.1184 MHz
24	A2	Address Bus	74	XTAL2	Crystal 22.1184 MHz
25	ALE	Address Latch Enable	75	R6	CN2 (Compulsory)
26	A1	Address Bus	76	R7	CN3 (Compulsory)
27	D7	Data Bus	77	R8	CN21 (All Clear)
28	A0	Address Bus	78	R3	Option Board
29	D6	Data Bus	79	R5	Buzzer
30	D0	Data Bus	80	RESET	System Reset
31	D5	Data Bus	81	PWRFAIL	Power fail
32	D1	Data Bus	82	R4	Display Disconnection Check
33	D4	Data Bus	83	P6	Display Clock
34	D2	Data Bus	84	P7	Display Latch Enable
35	D3	Data Bus	85	P8_1	Display Data in

11 ASIC SCR60K Pin Assignments

Pin No.	Name	Description	Pin No.	Name	Description
36	AUX1	CN10 #18 (Option Board 452)	86	RAM1_2	RAM1 /CS
67	AUX2	CN10 #4 (Option Board 452)	87	RXD	Option board (RxD)
68	R1	CN10 #19 (Option Board 452)	88	TXD	Option board (TxD)
69	R2	CN10 #3 (Option Board 452)	89	GND 14	+V (Ground)
40	GND6	0V (Ground)	90	K8	CN16 #1 (Key Scan)
41	VDD7	+5V	91	K7	CN16 #2
42	W5	CN13 #30 (Fiscal EPROM A16)	92	K6	CN16 #3
43	AUX3	PPI 8255 /CE	93	K5	CN16 #4
44	P10	CN13 #6 (Fiscal EPROM /CS)	94	K4	CN16 # 5
45	P9	CN13 #9 (Fiscal EPROM Program voltage, +12V)	95	K3	CN16 #6
46	PR6	CN13 #12 (Paper sensor)	96	K2	CN16 #7
47	PR7	CN9 #10 (Journal side validation)	97	K1	CN16 #8
48	PR8	CN9 #7 (Receipt side Reset Signal)	98	P1	CN17 #8 (Mode key)
49	PR9	CN9 #5 (Journal side Reset signal)	99	W2	CN12 #19 (Clerk key)
50	PR10	CN9 #1 (Receipt side Validation)	100	WR	Write Signal

12 Schematic Diagrams

[Schematics Sheet Content]

1. Main PCB Schematics.

1) Power Block -----	12-2
2) CPU Block -----	12-3
3) Memory and Power Fail Block -----	12-4
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6) Fiscal Block -----	12-7

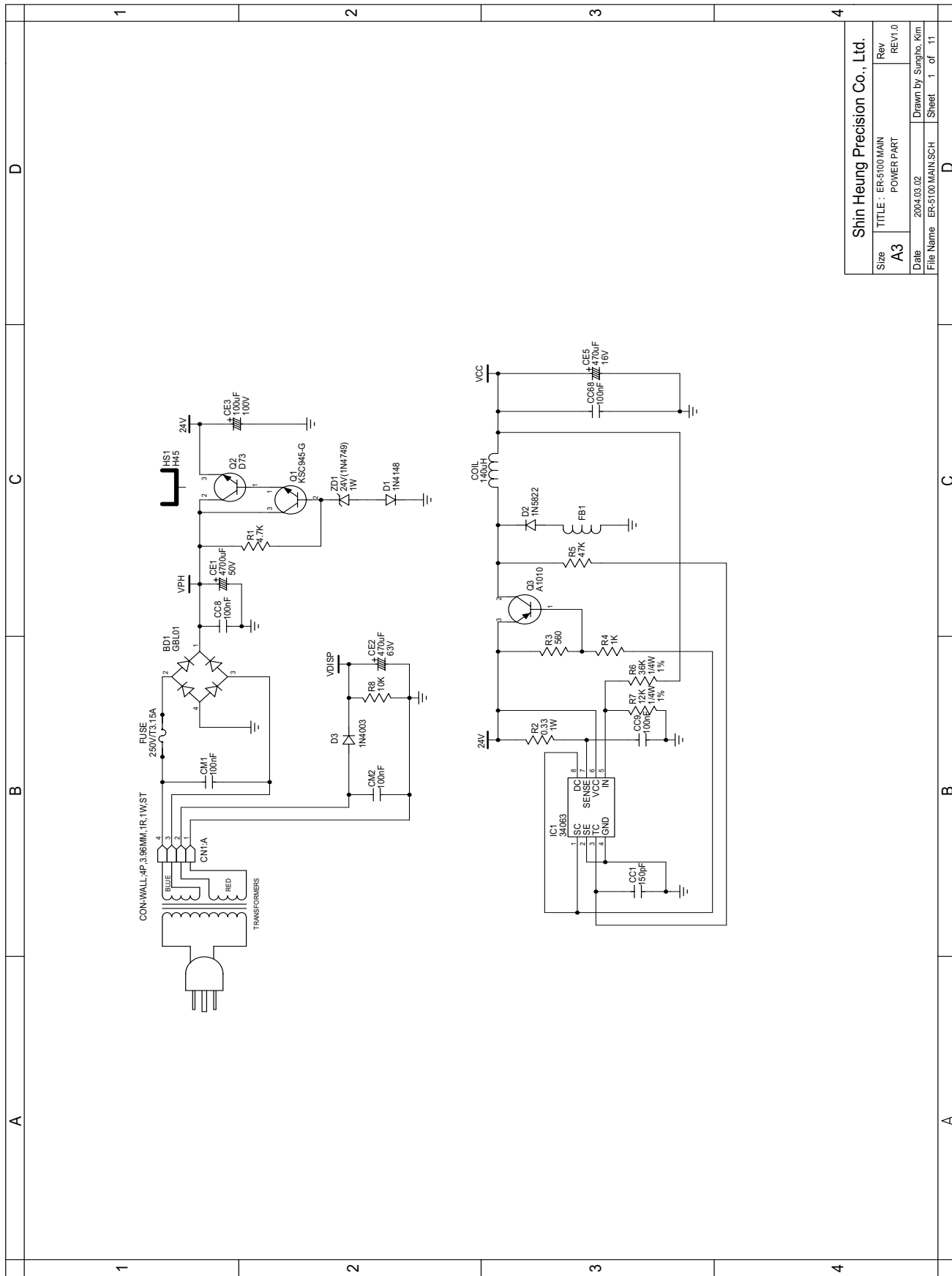
2. Display PCB Schematics.

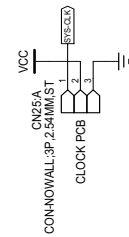
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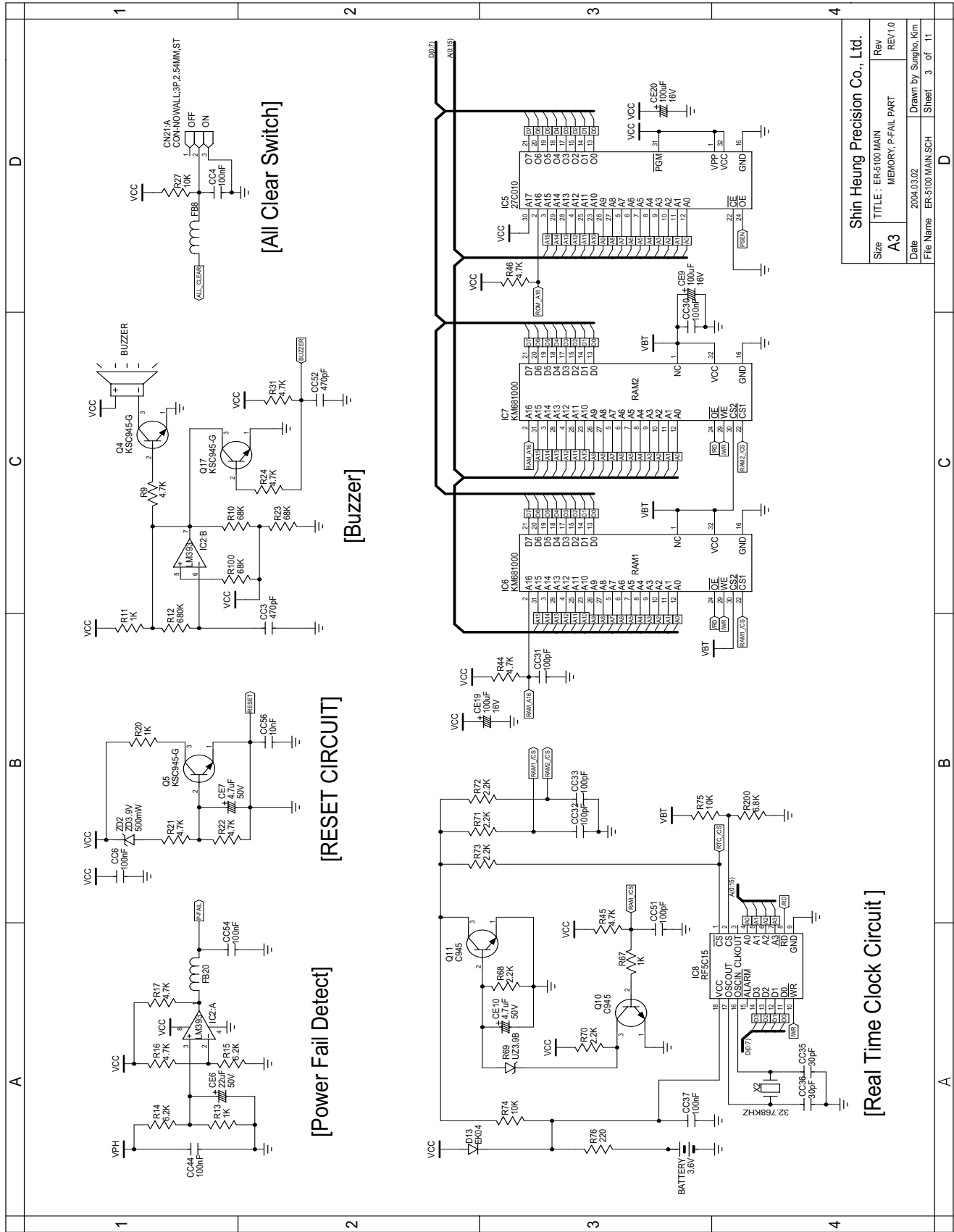
5. Clock PCB Schematics. ----- 12-11

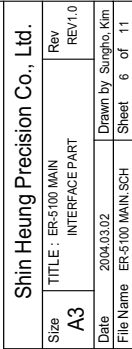
6. Interface PCB Schematics. ----- 12-12

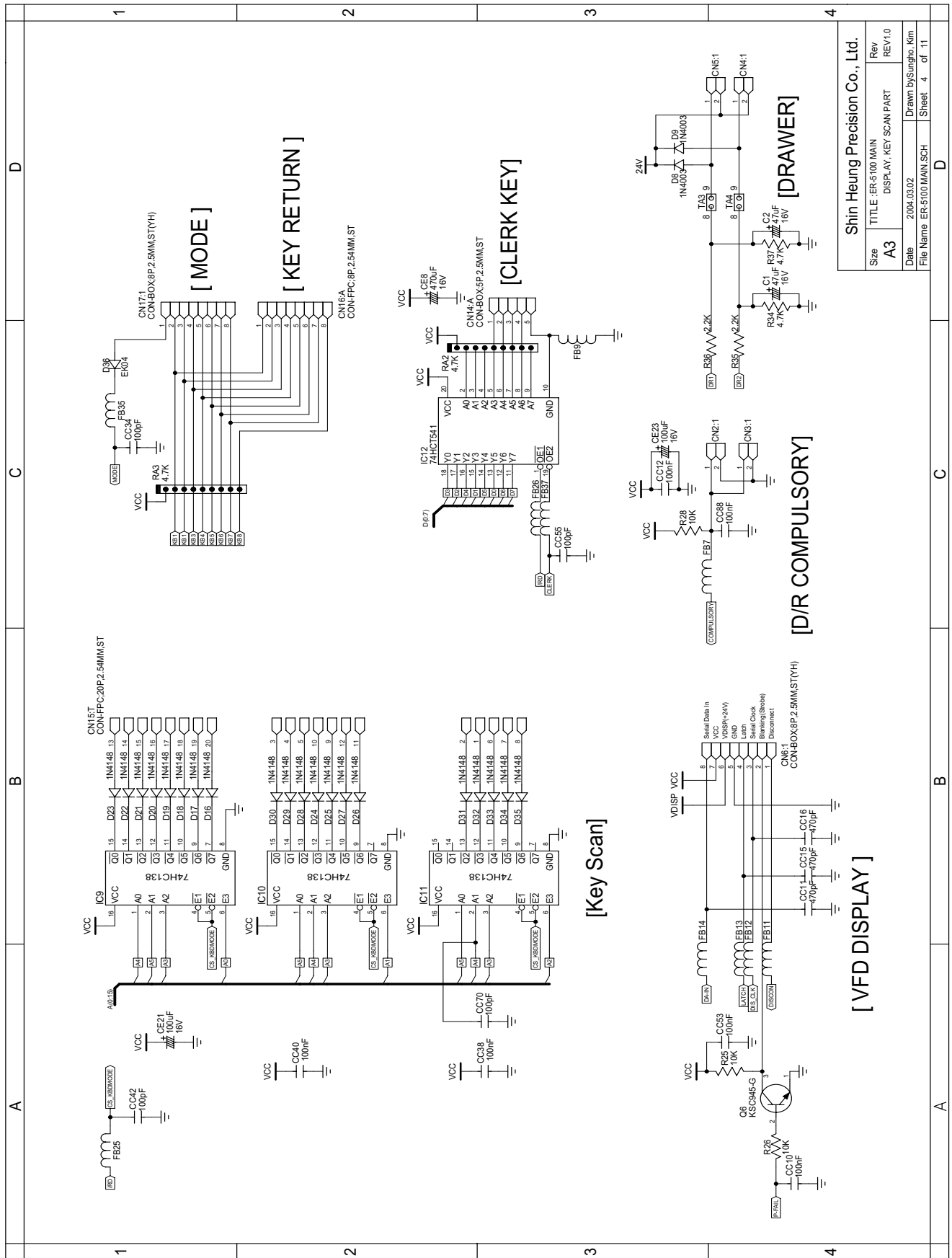


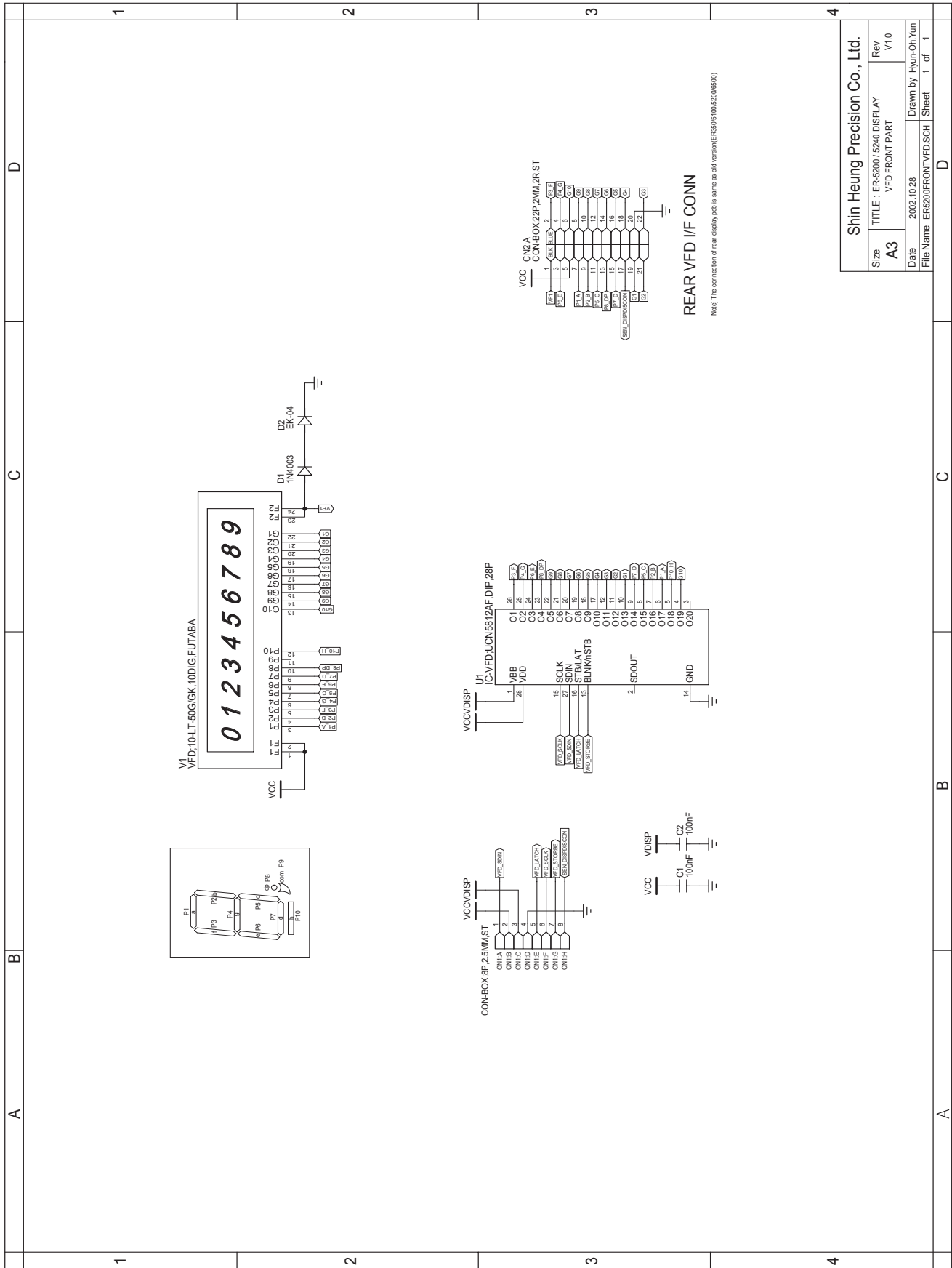


Size	TITLE : ER-5100 MAIN CPU, PRINTER PART	Rev REV1.0
Date	2004.03.02	Drawn by Sungbo, Kim
File Name	ER-5100 MAIN.SCH	Sheet 2 of 11









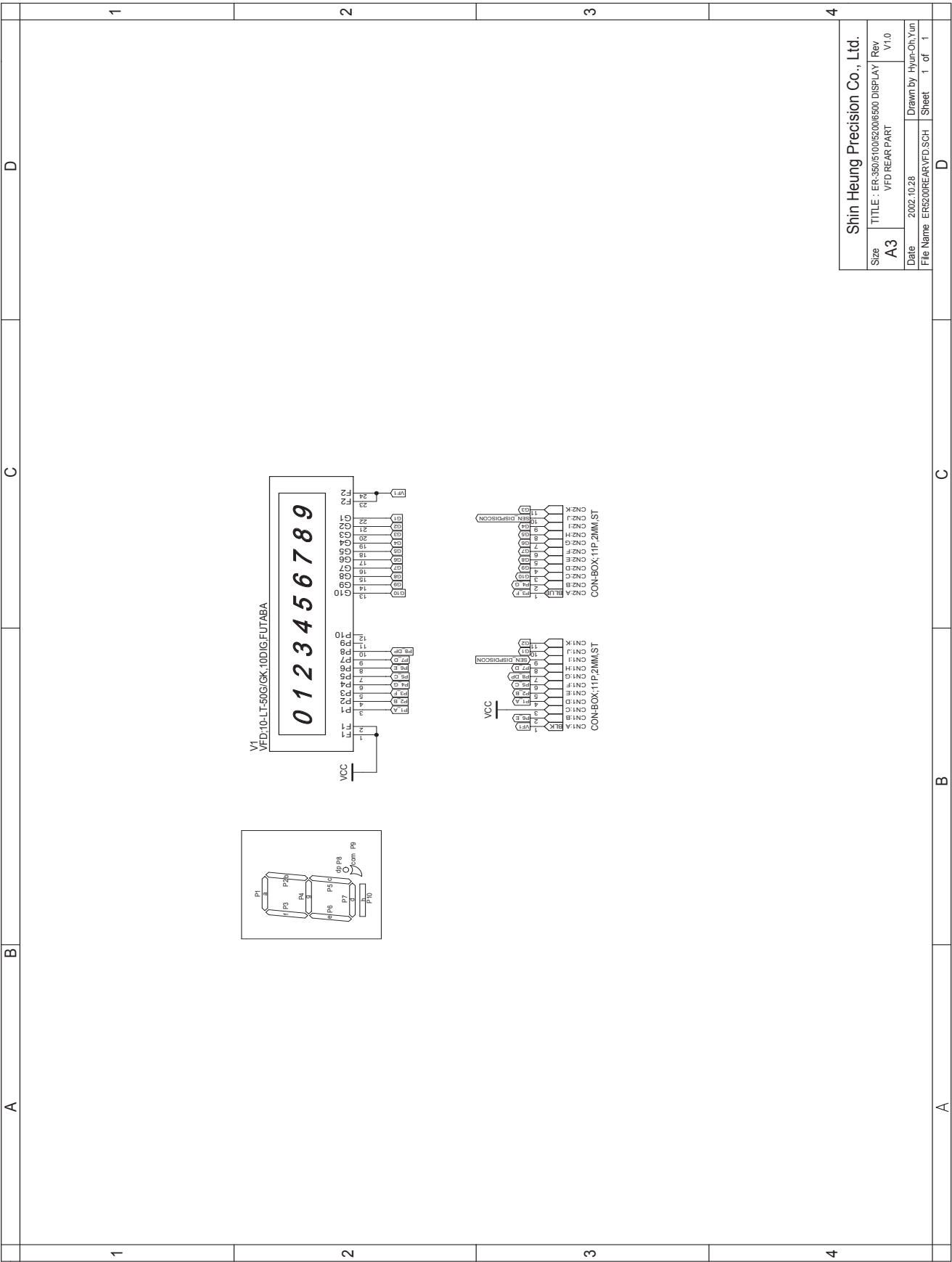
Shin Heung Precision Co., Ltd.

Size TITLE : ER-5200 / 5240 DISPLAY Rev V1.0

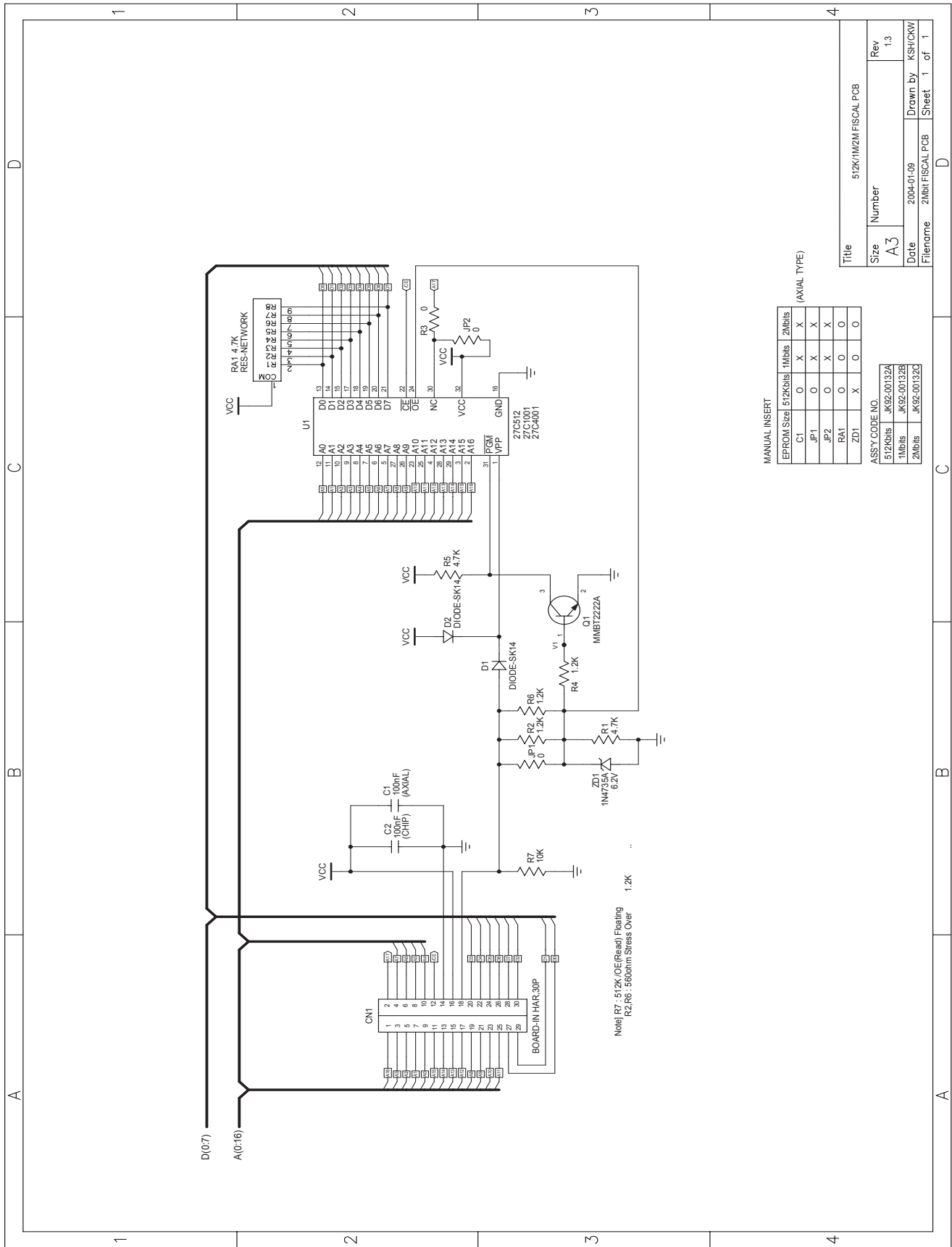
A3 VFD FRONT PART

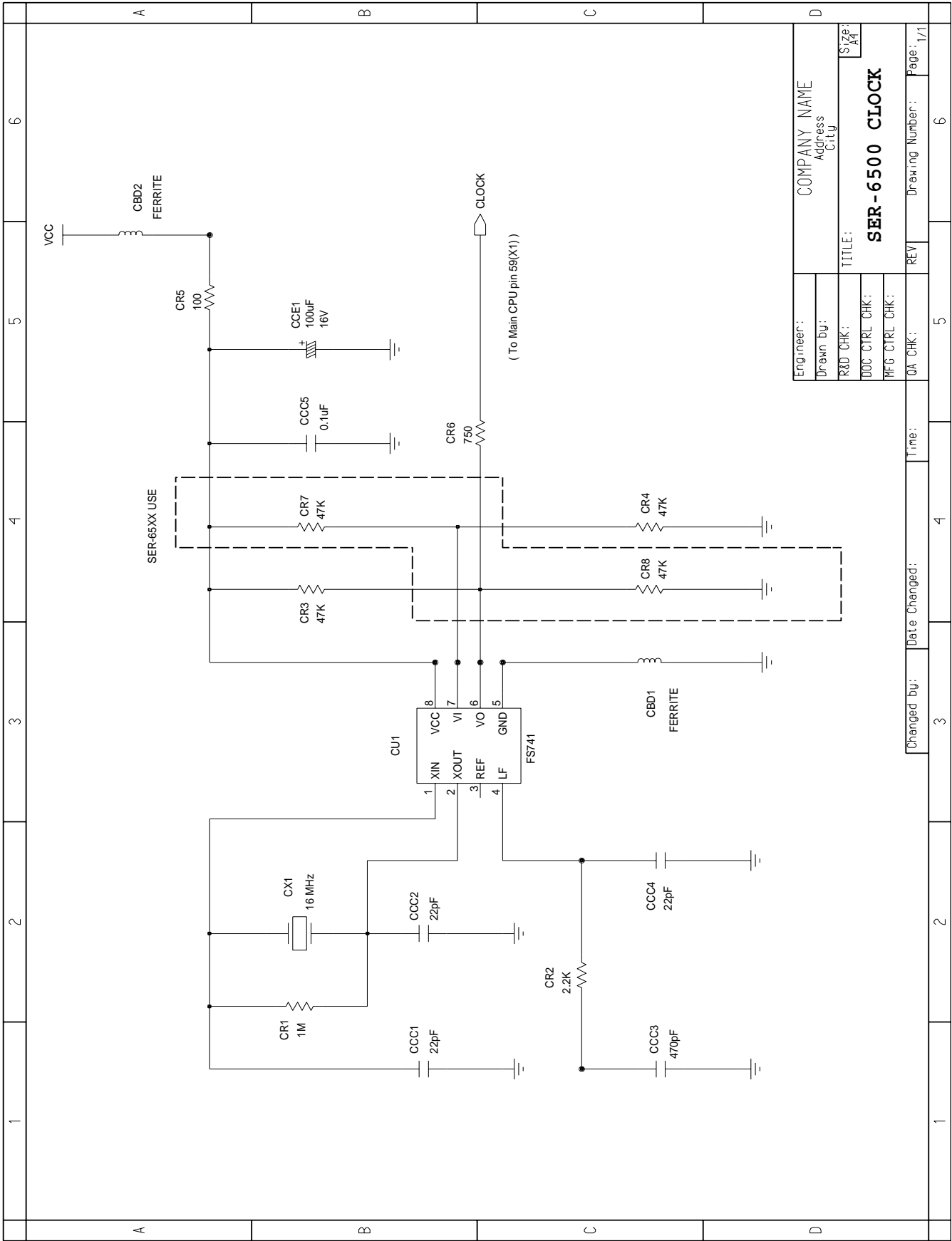
Date 2002.10.28 Drawn by Hyun-Oh Yun

File Name ER5200FRONTVFD.SCH Sheet 1 of 1



Shin Heung Precision Co., Ltd.			
Size	A3	TITLE : VFD REAR PART	Rev V1.0
Date	2002.10.28	Drawn by Hyun-Oh Yun	
File Name	ER500REARVFD.SCH	Sheet	1 of 1





[illegible]

Use this page to record any special servicing information such as Service Bulletins or Supplements.
When possible, record changes to Code numbers directly on the actual Parts List. Always record Service Bulletin numbers and Application Dates on this log to ensure that your data is always as current as possible.

SAM4S

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